This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

STG
Harvard
Univ.

THE ASTOR LIBRARY
N.Y.

ANNUAL REPORTS

OF THE

PRESIDENT AND TREASURER

OF

HARVARD COLLEGE.

1887-88.

87

CAMBRIDGE, MASS.
PUBLISHED BY THE UNIVE
1889.

- 13255 -

AS
DEC
23
1892
NEW YORK

PRESIDENT'S REPORT FOR 1887-88.

To the Board of Overseers: —

The President of the University has the honor to submit the following Report for the academic year 1887–88; namely, from Sept. 29th, 1887, to Sept. 27th, 1888: —

The losses of the University by death were unusually severe.

The death of Asa Gray on January 30th, 1888, in the 78th year of his age, deprived the University of one of its chief ornaments. He had been Fisher Professor of Natural History for forty-six years, had created the Herbarium, and had become one of the two or three leading botanists of the world. No American has been more eminent in natural science. He was equally remarkable as an author of popular manuals, an explorer, a systematizer, and a philosophic critic. He bequeathed to the President and Fellows, for the benefit of the Herbarium, his valuable copyrights, — a gift considerable in terms of money, but infinitely more precious as fruit of a busy and gentle life devoted to intellectual pursuits.

Ernest Young, who died March 2d, 1888, in the 36th year of his age, had just been elected Professor of history, after seven years of service as Instructor and four and a half as Assistant Professor. He was a young man of brilliant parts, who had received thorough training both at home and abroad as student and teacher, and seemed to have before him a long career of eminent usefulness. His early death was a grievous loss to his colleagues and his pupils.

Robert Dickson Smith, who died May 30th, 1888, in the 51st year of his age, had served for ten years in the Board of Overseers, with the most intelligent and affectionate interest. His opinions on education were conservative, and were always expressed with a clearness and a kindly wit which attracted attention and commanded respect.

James Freeman Clarke, who died June 8th, 1888, in the 79th year of his age, had served as a member of the Board of

Overseers for twenty-three years since 1863, having been elected once by the General Court and four times by the Alumni. No member of the Board had more influence than he, and none was more beloved. The three departments in which he felt the strongest interest were the College, the Divinity School and the Observatory. Upon all questions of University expansion, academic freedom for teachers and students, and College discipline, he took the most liberal view, and supported his opinion persuasively as well as forcibly. His annual reports on the Observatory and its work were full of an imaginative sympathy, and unquestionably contributed to the establishment of that department on its present satisfactory foundation. His fame as preacher, author, and independent citizen was a stimulating example to the successive classes of students, and an honor to the University at large.

Lists of the resignations and appointments of the year will be found in the Appendix (pp. 167–171).

The resignation of Professor Pickering as Phillips Professor was due to his election to the newly established Paine Professorship of Practical Astronomy, it having been provided in the will of Robert Treat Paine that the incumbent of his professorship should also be the Director of the Observatory.

Joseph Lovering, Hollis Professor of Mathematics and Natural Philosophy, resigned his professorship on April 8, 1888, to take effect Sept. 1, 1888, after a continuous service of fifty years as full professor. This term of service is unique in the history of the University, and is likely to remain so. Professor Lovering's service has been as faithful and honorable as it has been long; and he has had the satisfaction of seeing the department of physics expand under his charge from a few small rooms to one of the most spacious and convenient buildings in the world for physical instruction and research, from a very modest cabinet of illustrative implements to an ample and ever-growing equipment in apparatus and machinery, and from instruction exclusively elementary to a series of graded courses including the most advanced subjects and preparing students for original investigation. In recognition of his eminent services Professor Lovering has been elected Hollis Professor, *Emeritus*.

Mr. Allen Danforth resigned the office of Bursar, the duties of which he had discharged for fourteen years to the entire satisfaction of the Corporation, and was immediately appointed to the new office of Deputy Treasurer (see below). The University is indebted to Mr. Danforth for many simplifications and other improvements in the methods of the Bursar's office during a period when the work of the office increased rapidly both in volume and in intricacy. It is also indebted to him for very intelligent supervision of its buildings in Cambridge, of their steam and water apparatus, and of their service.

It will be noticed in the list of appointments that the number of promotions to professorships and assistant professorships was unusually large.

The appointment of Preachers to the University is for one year. The four gentlemen who served during the first year (1886–87) were reappointed for 1887–88; but last spring two new appointments were made for the year 1888–89, in execution of the original purpose of renewing the Board of Preachers with sufficient rapidity to secure a large variety in the College pulpit during each College generation of four years. One of the gentlemen newly appointed took the place of Rev. Edward Everett Hale, D.D., the senior member of the original Board; and the other filled the vacant place of Rev. Richard Montague, who was appointed in 1886 but by reason of ill-health had never been able to serve. Of the seven ministers thus far appointed upon the Board, two belong to the Orthodox Congregational Church, two to the Episcopal, two to the Unitarian, and one to the Baptist.

The Statutes of the University were amended during the year 1887–88 by adding to § 3 the following paragraph: —

"The Treasurer of the College may from time to time, and for periods of time while he holds the office, nominate a Deputy Treasurer, who, if appointed by the Corporation, and confirmed by the Overseers, shall have such of the powers and perform such of the duties of the Treasurer as the Corporation shall think fit, except the powers and duties of the Treasurer as a member of the Corporation, and of the Board of Overseers. A Deputy Treasurer shall receive such portion of the Treasurer's salary as the Corporation shall approve, and the Treasurer and Deputy Treasurer shall give to the Corporation their joint and several bond in the sum of one hundred thousand dollars for the faithful performance of his duties by the Deputy Treasurer."

This addition to the third statute enables the Treasurer, at his pleasure, to procure the appointment of a suitable deputy selected by himself. Since the present Treasurer came into office in 1876, the labors and responsibilities of the Treasurer have greatly increased, and the confinement, in summer as well as winter, incident to the prompt discharge of all his duties has become greater than most persons well fitted for the position would be willing to submit to. To appoint a responsible deputy, satisfactory to the Treasurer, seemed to the Corporation and Overseers the best way to remove this difficulty.

In 1888 for the first time the examinations for admission to the College were conducted exclusively on the new plan announced in 1886; and it is interesting to observe that the secondary schools, and the private tutors who prepare boys for college, have already responded in fair measure to the new suggestions, offers, and requirements of the Faculty. Thus, of the 315 candidates who completed the examination in 1888, 31 presented the history of the United States and of England instead of the history of Greece and Rome, and 93 presented experimental physics (elementary), as recommended by the Faculty, instead of descriptive physics and astronomy. Both French and German (elementary) were presented by 110 candidates. Among the new advanced subjects, French was offered by 61 candidates, German by 43, experimental physics by 9, and experimental chemistry by 22. These figures prove that the new requirements have already stimulated the teaching of French and German in secondary schools, and have promoted the introduction of laboratory methods of studying physics and chemistry. That the new options at the examination are welcome, is proved by the large use already made of them (see the Dean's report, pp. 36–41). Under the former scheme of admission examinations, the commonest method of entering was by presenting all the required elementary subjects but not both French and German, and among the advanced subjects Latin and Greek with composition. On the average of the years 1883 to 1886 inclusive, this set of subjects was offered by 221 candidates out of 315, but in 1888, by only 144 candidates out of 315; yet this was still by far the commonest combination of subjects, the next group of candidates who offered a common set of subjects numbering but 31. In all, 76 different combinations of subjects were presented; but this diversity caused not the slightest embarrassment in the conduct of the examination. This liberty of choice among the subjects of examination has the effect to increase very sensibly the number of candidates who offer more subjects than are required. One quarter of all the candidates in 1888 offered more subjects than were necessary (Dean's report, p. 82). This fact shows two things, — (1) that some schools already give instruction in more than the minimum number of subjects; and (2) that many boys can do more work before coming to college than the admission examination calls for. Interesting statistics concerning the extra work offered in 1888 will be found near the end of the Dean's report (p. 82). Another piece of evidence that boys are completing the secondary school course before their parents think them old enough to go to college is afforded by the Dean's reports for the past seven years. Between six and seven per cent of the Freshman classes of 1882 to 1888 inclusive have been boys who passed the admission examination one or more years before they actually entered the College.* Poverty and ill-health account for some of these cases, but youth for more. There is some reason to apprehend that this objectionable practice of keeping back boys, who are already well-fitted to take up college work, is on the increase (Dean's report, p. 34). Considered solely in the interest of the boys concerned, such delays are very seldom to be recommended; but

* Freshman Class of	Number	Previously admitted
1882	264	14
1883	258	11
1884	255	18
1885	258	12
1886	281	28
1887	295	16
1888	309	28

they tend to prove that the College admission examination is far from being an unreasonable standard of attainment for boys of eighteen. On the whole, the scheme of admission examinations adopted in 1886 bids fair to answer the main purposes which the Faculty had in view: — It is likely to enrich and diversify school programmes; to widen the avenues which lead to the University, without impairing in quantity or quality the preliminary training of any individual boy; and ultimately to utilize as preparatory schools for the University the best of that large class of American schools in which no Greek and only the elements of Latin are taught.

In the gradual process of converting Harvard College into a University of liberal arts and sciences about the average gain was made in 1887–88. Progress may be made in one or more of four principal directions: (1) in amplitude of instruction; (2) in freedom in choice of studies; (3) in better arrangement and coördination of studies within single departments; and (4) in *morale*. In respect to the volume of instruction, the gain of 1887–88 was about five per cent, that is, from 485 hours a week to 510 hours, without counting repetitions; and this gain coincides with the average annual increase of the last five, or of the last ten years (Dean's report p. 78). In respect to freedom in choice of studies, the Freshmen gained access to the departments of Italian, Spanish, and music, from which they had previously been excluded. It is for the advantage of every department that its elementary studies should be open to Freshmen; because otherwise the advanced courses of the department might not be reached in due season. The earlier a zealous student of the Italian language and literature, for example, masters the elements of the language, the better for him and the better for the department. Moreover, a young man of eighteen is already disadvantageously old to begin the study of Italian and Spanish, and is quite old enough to begin the scientific study of music. In respect to coördination of courses, an important improvement was made by recasting the whole set of courses in physics, so as to secure a better sequence of subjects and a more complete covering of the ground; the opportunity for special advanced study and research was offered for the first time in German, and more explicitly than before in Romance Philology; and the corresponding opportunities in history, physics and chemistry were enlarged. Lastly, the *morale* of the College was favorably affected by several causes. In the first place, the assured success of the voluntary method in the religious services of the University, concerning which some anxiety was felt during the first year of trial (1886–87), was a solid satisfaction to every member of the University, whether teacher or student. It meant the permanent removal of a question of conscience, the drying up of a constant source of irritation and ill-feeling, the reparation of what many believed to be a grave injury to religion, and the establishment at the heart of the University of a fresh, strong influence for good. Secondly, a considerable number of instructors used effectively during 1887–88 the new regulations of 1886, which provide that every student shall satisfy his instructor in each of his courses of study that he is performing the work of the course in a systematic manner, and that any instructor may, with the approval of the Dean, exclude from his course at any time a student who is neglecting the work of the course. These regulations emphasize the fact that membership in any instructor's class is a privilege granted by the College, — a privilege to be kept only by regular attendance and systematic work to the satisfaction of the instructor. If a student does not avail himself of his privilege, he naturally loses it; if he is irregular in his attendance without visible cause, he naturally feels that in courtesy and in his own interest he owes an explanation to the instructor. This direct personal relation between the instructors and the students, free from the intervention of any officials charged in a formal way with the maintenance of College discipline in general, is in the highest degree wholesome and satisfactory. The regulations of 1886, together with the careful maintenance and watchful use of the record of each student's attendance which is kept in the Dean's office, promise to solve all the remaining difficulties of the transition from the former mechanical system of enforced attendance, with all its pernicious apparatus of excuses, certificates and graduated penalties, to a system of rational liberty with direct personal responsibility for results. In all its discipline, the College Faculty tends to abandon the principles of government implied in the words offences and punishments, and to act, even in cases of gross neglect or vice, on the principle contained in the last clause of the statute concerning students not candidates for a degree — "The several Faculties have the right to deprive any such student of his privileges, if he abuse or fail to use them." A third cause of improved relations between Faculty and students was the exhaustive report on athletics which was presented to the College Faculty in June last, by Professors J. W. White, Chaplin and Hart, an outcome of a discussion which took place in the Board of Overseers during the spring. This report, with the accompanying statistics, disposed of some of the common objections to athletic sports and intercollegiate contests, demonstrated their general utility, and set in a clear light the improvement of the average physique of the students which the Gymnasium and the various sports had together brought about. Although the report contained many criticisms upon the present management of athletic sports, its general effect was highly encouraging both to the Faculty and to the undergraduates as to the moral and physical effects of athletics at Cambridge taken as a whole. It immediately brought about a better understanding between the Faculty and the students on a subject of great interest, concerning which there had been much divergence of opinion. Some of the recommendations of the report have already been adopted, and others are likely to be. There are still many excesses and evils connected with athletic sports as intensified by intercollegiate competition; but the Faculty take comfort in the general physical improvement which they witness in the average student; and they hold that dyspepsia is less tolerable than a stiffened knee or thumb, and that effeminacy and luxury are even worse evils than brutality.

From year to year an increasing number of graduates of other colleges seek admission to advanced standing in Harvard College without examination. As a rule they are admitted to the Senior or Junior class, sometimes to the Sophomore, and prove themselves excellent students in all respects. In the four years from 1885 to 1888 inclusive 25 students of this sort were admitted on the average each year. Of this number, a few, who were not graduates, were exceptional students from the higher classes of the several colleges, and a few passed partial examinations.

An increasing number of Special Students from year to year succeed in getting transferred to the regular College classes, after having given satisfactory proof of their qualifications by passing examinations in College subjects. The number of such transfers during six years past is as follows : —

1882–83	10	1884–85	6	1886–87	15
1883–84	9	1885–86	14	1887–88	30

The increase is doubtless due partly to the increase in the number of Special Students, and partly to the improvement in their quality which has resulted from the careful supervision exercised over this class of students by a committee of the Faculty, as described in the Dean's report for 1886–87, p. 42. The methods adopted by this committee merit a wider application in the College.

The College, including the Graduate Department, is now paying out more than $50,000 a year to students who need aid to compass their education. This expenditure is partly for the direct benefit of the individuals aided, and partly for the indirect benefit of the community through the labors and characters of these individuals. Other things being equal, it is more profitable to society to have healthy and vigorous youth highly educated by public endowments than to have sickly and feeble youth so educated; for the healthy and vigorous have a better expectation of life and usefulness. Heretofore no attention has been paid to the bodily condition of the recipients of scholarships and other beneficiary aid; and it is probable that these recipients have been below the average of the whole body of students in health and vitality. In the ten College classes from 1877 to 1886 inclusive, 412 men held scholarships for one year or more. Of these, 5 died in College, 5 left College on account of ill-health, and 5 left College for other reasons. Of the remaining 397, three per cent have died since graduating; of the 1485 other men who graduated in those classes two and three-quarters per cent have died. If it should come to be understood in families and schools that sound health is one qualification for scholarships or other aid from College endowments, the probability is that greater pains would be taken to preserve and increase the physical vigor of boys who give intellectual promise. The College might do much to promote this desirable end. A short step in this direction was taken in 1887–88, when the Faculty instructed the Dean to inform holders of scholarships that they are expected to present themselves twice in the year before the Director of the Gymnasium, to be examined as to their physical condition, and to receive suggestions as to the care of their health.

The following additional Summer courses were given in 1888; — a course in experimental elementary chemistry, a course in advanced geology, two courses in German, two courses in French, and a course in topography. The whole number of courses given during the summer vacation of 1888 was fourteen. A course in experimental elementary physics will be added in 1889. The summer courses of instruction are now under the supervision of a committee representing the different departments.

The Graduate Department, which since its establishment in 1872 has only three times had over 70 students, and never over 80, contained 97 students in 1887–88, of whom 52 were newcomers and 37 were graduates of other colleges (27 different institutions), a larger number from other colleges than were ever registered before. Nevertheless, the resort to this department from other colleges is still small in proportion to the volume of advanced instruction offered, and to the unequalled facilities for research in all directions which the University libraries, laboratories, and collections afford. The Secretary of the Academic Council again urges (p. 87) that more scholarships are needed for graduate students. The eager demand for the six Morgan Fellowships (p. 86) and the excellent quality of the incumbents from year to year are strong arguments in favor of more such endowments.

At a meeting of the Academic Council Nov. 16, 1887, it was voted (34 to 6) "that with a view to lower the average age at which Bachelors of Arts of Harvard College can enter the professional schools and the Graduate Department, the College

Faculty be requested to consider the expediency of a reduction of the College course." There were fifty professors present at this meeting, of whom twenty-eight teach mainly in the College and the Graduate Department and twenty-two in the professional schools. The vote of the Council was received by the College Faculty on Dec. 6th, and was discussed with interest at several meetings. The subject is, however, full of difficulty, both educational and financial, and the Faculty, although convinced that the evil to which the Medical Faculty and the Academic Council have called their attention is a grave one, have not yet seen their way to recommend any definite action.

The Divinity School is the only professional school of the University, which receives no students as candidates for its degree who are not already Bachelor of Arts. Considering the small number of students in the School, it is recruited from a remarkable number and variety of colleges. Thus, in 1887–88, 17 students came from 3 theological seminaries and 12 colleges, and in 1888–89, 26 students came from 3 seminaries and 14 colleges.

Nine courses of instruction given in the Divinity School have been adopted by the College Faculty as suitable for candidates for the degree of Bachelor of Arts. It might be well to adopt two other courses — The history of Israel, political and social, by Professor Lyon, and The history of the religion of Israel, by Professor Toy. The history of Israel is as liberal a study as any other history.

The Library building answers all expectations. The valuable library, now enriched by the collection of the late Professor Ezra Abbot, is placed in security, and has been thoroughly classified. It is used to advantage in the handsome and well-lighted reading-room.

An unrestricted gift of $1175 was received during the year from a former beneficiary, being the amount received by him while in the School with interest to date. The Divinity School aids a larger proportion of its students than any other department of the University; but it is noticeable, on the other hand, that of late years more beneficiary money, in proportion to the amount paid out, has been returned by its graduates than by those of any other department. Considering the supposed small earnings of ministers compared with those of other professional men, this fact is suggestive.

The next improvement of a mechanical nature which is needed at the Divinity School is a complete overhauling of Divinity Hall, to bring the building nearer to the standard of the newer dormitories.

The equipment of the School is now good, and its foundations are sure; but it cannot have many students until the principle of liberty in theological education is more generally accepted than it now is. For many generations, students of theology have been expected to commit themselves to a denominational institution and to a set of theological and philosophical opinions, before they have had an adequate opportunity to examine the grounds of those opinions, or the history and relations of the denomination to which they prematurely attach themselves. Since the statement was made in the report for 1877–78 concerning the unsectarian policy of the School and its pecuniary needs, its endowment, apart from its share in the income of the Bussey Trust, has been more than doubled (Aug. 31, 1878, $161,282.74; July 31, 1888, $379,483.26), a new building has been provided for it, its library has been much increased, and, best of all, important additions have been made to the permanent teaching staff. The various denominational organizations which recruit the ministries of the Evangelical sects, take as a rule no interest in young men who go to this School; but there is an active demand among churches for the graduates of the School, all of whom find immediate employment, — which is much more than can be said of most professional schools.

The Law School had a year of great prosperity in 1887–88. The number of students increased twenty per cent, the Story Professorship was filled again, after having been vacant four years, and the Harvard Law School Association gave the School $1000 with which to increase the amount of instruction in Constitutional Law during the year 1888–89.

The Dean's report gives much information about the sources of the supply of students for the Law School (pp. 96–100),

— the states and countries from which they come, the colleges other than Harvard which have sent graduates to the School since 1870–71, the number sent by each college, and the proportion of Harvard Bachelors of Arts in each successive class for fifty years. It appears that the states which have yielded a steady supply of students since the three-years' course was established in 1877–78 are California, Illinois, Maine,* Massachusetts, Missouri,* New Hampshire,* New York, Ohio, Pennsylvania,* and Vermont. As regards colleges other than Harvard which feed the School, the Dean's tables show that 125 institutions scattered all over the country have sent 463 students in 18 years, but that only four — namely, Amherst (with 25 graduates), Bowdoin (with 19), Brown (with 28), and Yale (with 47), can be said to be constant contributors. Dartmouth (with 18 graduates), Michigan (with 12), Oberlin (with 13 since 1877–78), Princeton (with 13) and Williams (with 18) have been less regular contributors; and no other institution has sent more than 9 students in the eighteen years which the tables cover. As regards the variety of the sources of supply and their distribution over the country, the exhibit is very satisfactory; but the tables can hardly be said to suggest any law of growth by which the past can be interpreted, or the future of the School predicted. As the Dean points out, the most important change which has taken place in the School since 1870–71, apart from improvements in the scheme and methods of the instruction, is to be found in the increased length of residence of the average student.

The year saw some important changes wrought in the Medical School. The whole course of study was revised, two hours a week of elective studies were introduced into the third year, and all the studies of the fourth year were made elective. The opportunity to make choice among courses comes only when the student has mastered all the fundamental subjects, and when it is reasonable that his predilection for this or that medical or surgical topic should be gratified. Students of the fourth year who are also house officers in any one of the various Boston hospitals, and students who devote the greater part of the fourth year to advanced work in any of the laboratories of the School will not be required to pass so many examinations at the end of the fourth year as other students, hospital and laboratory work being accepted as qualification in part for the degree.

---

* Except in one year.

Medical investigation was carried on actively and successfully in all the School laboratories, four out of the fifteen subjects relating to human food.

The Medical Faculty was increased in size from 21 to 26 members. One Assistant Professor resigned, one was newly elected, and one was promoted to be Professor. Three Professors and one Instructor without limit of time were chosen, and the Demonstrator of anatomy was appointed a member of the Faculty for five years. The number of annual appointments given in the Catalogue was also increased from 38 to 45. At present, therefore, no fewer than 71 members of the medical profession in Boston and the vicinity are officially connected with the School.

The endowment of the School, which is very small ($180,494.68) in proportion to the activity and usefulness of the Department, was not increased in 1887–88, and the annual charges press closely upon the revenues.

The Dental School was never more prosperous than in 1887–88 and the year now current. The admission examination instituted in 1885 at first caused the number of students admitted to decline; this diminution proved to be only temporary, but the good effects of the examination abide. In 1887–88 the School had three dental Professors, three Instructors in dental subjects appointed for more than one year, five Instructors in operative dentistry who superintended the work of students in the infirmary, and two Demonstrators. Each one of these teachers gave to the School several hours of daylight every week for many weeks; yet the whole sum paid for salaries was $3000. A practising dentist does not derive from a position as teacher an advantage corresponding to that which a physician often gains. The medical teacher, particularly if he have a specialty, makes his skill known to many young physicians, and through them acquires consultation practice, or the sole treatment of difficult or interesting cases. The dentist who teaches has no such opportunities. He must teach for the love of it, or for a salary, or for the distinction which his position gives him; no indirect benefits will accrue to him, except perhaps in the most difficult parts of mechanical dentistry. It is certain that the teachers in the Harvard Dental School have not taught, and do not teach, for the sake of their salaries. Most of them have had none, and no one, except the Demonstrators in the first years of their service, has received enough salary to pay for the hours of daylight taken from his practice. Several thousand patients are treated every year in the mechanical and operative infirmary under the most skilful supervision at nominal charges. The amount of the infirmary receipts in 1887–88 was $2107.37, a sum which barely met the cost of supplies, service, fuel, gas and water. It is proper that the Alumni and friends of the University should understand by whose sacrifices this creditable and necessary department is carried on without any endowment except a fund of $2155.85, of which officers and graduates of the School have contributed all but $150. The Medical School provides the Dental School with free quarters, and a large amount of gratuitous instruction.

There are registered for the current year 42 students (an increase of 10 over 1887–88), of whom one comes from England, two from Japan, two from Germany, two from New Brunswick, two from Canada, one from Chili, one from California, one from Illinois, and the rest from New England. In no other department is this proportion of foreigners approached. The increase in the number of students is probably due in part to the Statute adopted April 1, 1887, by which the General Court established a Board of Registration for dentists entitled to practice in Massachusetts, and made admission to registry procurable after Oct. 1, 1887, only by examination before the Board. This excellent law gives to the people of the Commonwealth a much-needed protection against incompetent dentists; but it is remarkable that protection should have been given by the legislature against untrained practitioners in dentistry, before it has been given against incompetent physicians and surgeons for men and animals. Ignorant doctors and surgeons do incomparably more harm every day than un-skilful dentists. The explanation probably is that the practitioners of dentistry have not been divided into opposing camps.

In May and June last, the Faculty of the Lawrence Scientific School and the College Faculty both passed votes recommending the Corporation and Overseers so to amend the 9th Statute that the power to recommend candidates for the degree of Bachelor of Science might thereafter be in the hands of the College Faculty. As there was in each Faculty a decided difference of opinion as to the wisdom of this step, the Corporation thought it best to take no action on the subject. Meanwhile every member of the Scientific Faculty is also a member of the College Faculty, and, as the Treasurer states in his report (p. 5), the expenses of the common instruction are so divided between the School and the College "that a deficit does not create any debt for the School." In 1887–88 the School had a small surplus. The strongest argument in favor of maintaining for the present the separate organization of the Scientific School is that the School prepares young men for certain professions, — namely, those of the civil engineer, electrical engineer, chemist, geologist and naturalist — and that the "group," or prescribed combination system of studies, which obtains in the School, is better adapted for this specific purpose than the open elective system which prevails in the College.

The Veterinary School cannot answer the ends for which it was established without endowment or aid from the State. The Hospital, which is an essential means of teaching, can support itself, provided that it receive those animals only whose owners can pay for treatment — a most unfortunate limitation of its usefulness; but it has now become manifest that the School cannot maintain itself even with the generous aid of the Medical School. The accounts of the Hospital and School have thus far been merged; so that the difficulties of the case have not clearly appeared. There has been a deficit in every year since 1883–84 with one exception (1886–87), and in 1887–88 the deficit amounted to $1576.12. The continuance of the deficit raises the question whether there be interest enough in the welfare of animals, regarded either as means of pleasure or as sources of profit, and in the welfare of men as affected by animals to secure the endowment of the Veterinary Department, including both School and Hospital. The department should be made a centre of research in the many fields where the health and well-being of men and animals are bound up together. It should annually send out a small number of highly trained men for the service of the government, national, state, and municipal, of corporations, and of the public. It should also relieve suffering among animals, and help poor owners of sick or wounded animals by conducting a free clinic at least twice a week.

The report of the Librarian (pp. 122–132) gives many interesting and impressive statistics. The accessions of 1887–88 to the University Library (16,468 volumes) were the largest ever recorded. The use of the books increases in all directions, and as regards resident graduates, Divinity students, Scientific students, Seniors and Juniors, leaves little to be desired. The laboratory and class-room libraries have increased to ten, of which six are open in the evening. The Librarian's report is the best single index of genuine growth and fruitful activity in the University, and as such is especially commended to the attention of the governing boards.

It is reasonably certain that more than 10,000 volumes a ear will hereafter be added to the collection in Gore Hall, and hat the space required for cataloguing and delivering books will steadily increase. There is in the present building no comfortable reading-room, and no safe means of lighting artificially either the reading-room or the book-shelves. Accordingly, the Library cannot be used after 4 P.M. during several of the best months of the academic year. The President and Fellows are quite unable to provide the money to build a reading-room, or even to convert old Gore Hall into a book-stack according to the plans prepared in 1884 by Messrs. Ware and Van Brunt. They strained their available resources in building the new stack in 1876 at a cost to the unrestricted funds of $90,000. Yet the need of more room is already urgent, and there is no department of the University which inspires a more general interest. A spacious, well-ventilated, and well-lighted reading-room, which could be used until 10 P.M., would now be the best possible addition to the material equipment of the University. When other departments of the University have needed new facilities or new accommodations, they have resorted to general subscriptions as the means of raising considerable sums. Thus, the new Medical School was built by general subscription, as is also the Museum for the botanical department. The fund of $75,000 for the maintenance of the Jefferson Physical Laboratory was raised by subscription through the exertions of a few friends. The Divinity School has twice within ten years raised large sums by this means. These instances encourage the belief that a combined effort on the part of all the departments whose laboratory and workshop the Library is, and whose materials for study are there provided, would succeed in obtaining by general subscription money enough to convert old Gore Hall into a fire-proof stack and to build an ample reading-room. The amount of money needed would be about $150,000. The departments of philology, literature, philosophy, political science, history, music, and mathematics have never asked the Alumni and friends of the University for any costly equipment or apparatus. They may now confidently ask for the means of providing room for books and room for readers.

The equipment of the Botanical Department is constantly increasing and improving.

The Herbarium, under the care of Dr. Watson, has been enriched by some important collections (p. 132), and has done its usual work. Its resources will be increased by the proceeds of the copyrights of Dr. Gray's books; but nothing was received from this source in 1887–88.

The Botanic Garden, under the care of Professor Goodale, has prospered, and has been more resorted to than ever before. The Director believes that the displays made by the Garden at the exhibitions of the Massachusetts Horticultural Society have been useful, and that the Summer Course in botany serves a good purpose. Even in the months of winter and early spring the Garden has supplied ample material for all the regular botanical courses. The support of the botanical laboratories — temporarily placed in Harvard and Massachusetts Halls — falls in part upon the funds, the income of which is at the disposition of the Director of the Botanic Garden, as does also the cost of procuring and preparing specimens for the botanical museum which is shortly to be arranged in the large building now in process of construction on Oxford St. (See the Director's report, pp. 133–137.) This building forms the central portion of the Oxford St. front of the great University Museum, of which the northern wing is the Museum of Comparative Zoölogy and the southern the Peabody Museum of American Archaeology and Ethnology. The sum of $65,000 has been subscribed towards the cost of the structure, which is to contain ample laboratories and a large lecture-room for the botanical department as well as its museum. The labor of procuring these new resources has fallen chiefly upon the Director of the Garden; but he has been greatly aided by the Curator of the Museum of Comparative Zoölogy, Mr. Alexander Agassiz, and the Chairman of the Overseers' Committee on the Garden, Col. Henry Lee. The subscriptions vary in amount from $15.00 to $20,000; and it is noteworthy that some of the larger subscribers and a majority of all the subscribers are women. The subject has a strong interest for women, not only in its scientific and educational aspects, but also in relation to family refinement and household decoration.

The collections in cryptogamic botany, under the charge of Professor Farlow, were increased during the year by the purchase of the valuable cabinet of the late Professor Edward Tuckerman of Amherst, a master in this branch of the science, and an early and skilful collector in the American field. Twelve persons interested in the subject contributed the $3000 needed for this purchase in sums ranging from $50 to $1000 (Treasurer's report, p. 10). To the zeal and knowledge of Professor Farlow the University is indebted for an herbarium of cryptogamic botany which has already become of great value, and which grows steadily under his assiduous care and that of a single expert assistant, half of whose salary is paid by Professor Farlow himself. The Corporation would gladly prevent such sacrifices on the part of Professors; they would gladly relieve scholars capable of the highest work of all the mechanical or clerical labor which expert assistants might do under their direction; they look back with regret at the days and years spent by men like Louis Agassiz, Jeffries Wyman, Ezra Abbot, Ephraim Whitman Gurney, and Asa Gray (to mention only the dead) in such mechanical or clerical labors; but they are absolutely unable completely to prevent the recurrence of such losses. They must use the resources which the community places in their hands, primarily, to provide the instruction and guidance, and the aids to instruction, which are demanded by the hundreds of students who throng the College halls, and only secondarily to promote research and the advancement of learning. Fortunately, much incidental assistance can be given through the libraries, laboratories, and collections, to explorers and inventors in literature and science, and this assistance becomes more and more considerable in amount, as the instruction given by the University becomes more special and more advanced.

So far as the planting of trees was concerned, the season was lost at the Arnold Arboretum, because no progress was made on the roads which are to be built under the direction of the Park Commissioners of Boston. The University has no right to make the roads, and no money to make them with; and the City postpones the construction of them. The consequence is that many specimen trees, carefully selected and tended for years, are lost to the Arboretum, because they get too large in the nurseries. The time lost for the formation of an instructive and beautiful Arboretum will, of course, be much greater than the actual delay in the construction of the roads. Meantime, the attention of the officers of the Arboretum has been turned in other useful directions. The Director has given much time to the establishment of a weekly journal on gardening and forestry which has been enthusiastically received by the public interested in these subjects; and the Superintendent, Mr. Dawson, has devoted a considerable part of his time to the collection of shrubs, to which he has added during the year 5792 plants of native species collected by himself.

It is now sixteen years since the formation of the Arnold

Arboretum was begun. For several years its available income did not exceed $4000 a year; and it has never exceeded $9000 a year. At present, its normal income is about $7500 a year. In spite of narrow resources, and of injurious delays for which its officers have not been accountable, the Arboretum has already rendered considerable services to arboriculture and horticulture in the United States, and has established relations — which cannot but be increasingly serviceable as time goes on — with kindred institutions at home and abroad, and with collectors, nurserymen, and landed proprietors.

It is impossible to review the progress of the botanical departments for the year in which Asa Gray died without being impressed with the strength and durability of his influence. All four of the men who are now superintending these departments were selected, helped forward in ways innumerable, and recommended by him to the President and Fellows for the positions which they now hold. All four departments have already derived many benefits from the respect and affection which botanists and collectors everywhere felt for him, and from the sense of obligation under which he had placed them; and all have been inspired by the sight of his wonderful industry, fertility, and ardor.

The Chemical Laboratory was very full and active during 1887–88, about 350 persons receiving instruction therein. The lecture-room on the first floor was converted into a laboratory for elementary experimental chemistry; and extensive repairs were made on the interior of the whole building at a cost of $6000. The Director calls attention (p. 142) to the further improvements desirable in this department — namely, the transfer of the mineral collections to the University Museum on Oxford St., and the building of an adequate lecture-room for the elementary lectures on chemistry. His remarks on this subject, and on the regularity of attendance at laboratory exercises, are respectfully commended to the attention of the governing boards. All of the teachers, three of the assistants, two students, and one former student published original investigations in the course of the year.

sacrifices on the part of Professors; they would gladly relieve scholars capable of the highest work of all the mechanical or clerical labor which expert assistants might do under their direction; they look back with regret at the days and years spent by men like Louis Agassiz, Jeffries Wyman, Ezra Abbot, Ephraim Whitman Gurney, and Asa Gray (to mention only the dead) in such mechanical or clerical labors; but they are absolutely unable completely to prevent the recurrence of such losses. They must use the resources which the community places in their hands, primarily, to provide the instruction and guidance, and the aids to instruction, which are demanded by the hundreds of students who throng the College halls, and only secondarily to promote research and the advancement of learning. Fortunately, much incidental assistance can be given through the libraries, laboratories, and collections, to explorers and inventors in literature and science, and this assistance becomes more and more considerable in amount, as the instruction given by the University becomes more special and more advanced.

So far as the planting of trees was concerned, the season was lost at the Arnold Arboretum, because no progress was made on the roads which are to be built under the direction of the Park Commissioners of Boston. The University has no right to make the roads, and no money to make them with; and the City postpones the construction of them. The consequence is that many specimen trees, carefully selected and tended for years, are lost to the Arboretum, because they get too large in the nurseries. The time lost for the formation of an instructive and beautiful Arboretum will, of course, be much greater than the actual delay in the construction of the roads. Meantime, the attention of the officers of the Arboretum has been turned in other useful directions. The Director has given much time to the establishment of a weekly journal on gardening and forestry which has been enthusiastically received by the public interested in these subjects; and the Superintendent, Mr. Dawson, has devoted a considerable part of his time to the collection of shrubs, to which he has added during the year 5792 plants of native species collected by himself.

It is now sixteen years since the formation of the Arnold

Arboretum was begun. For several years its available income did not exceed $4000 a year; and it has never exceeded $9000 a year. At present, its normal income is about $7500 a year. In spite of narrow resources, and of injurious delays for which its officers have not been accountable, the Arboretum has already rendered considerable services to arboriculture and horticulture in the United States, and has established relations — which cannot but be increasingly serviceable as time goes on — with kindred institutions at home and abroad, and with collectors, nurserymen, and landed proprietors.

It is impossible to review the progress of the botanical departments for the year in which Asa Gray died without being impressed with the strength and durability of his influence. All four of the men who are now superintending these departments were selected, helped forward in ways innumerable, and recommended by him to the President and Fellows for the positions which they now hold. All four departments have already derived many benefits from the respect and affection which botanists and collectors everywhere felt for him, and from the sense of obligation under which he had placed them; and all have been inspired by the sight of his wonderful industry, fertility, and ardor.

The Chemical Laboratory was very full and active during 1887–88, about 350 persons receiving instruction therein. The lecture-room on the first floor was converted into a laboratory for elementary experimental chemistry; and extensive repairs were made on the interior of the whole building at a cost of $6000. The Director calls attention (p. 142) to the further improvements desirable in this department — namely, the transfer of the mineral collections to the University Museum on Oxford St., and the building of an adequate lecture-room for the elementary lectures on chemistry. His remarks on this subject, and on the regularity of attendance at laboratory exercises, are respectfully commended to the attention of the governing boards. All of the teachers, three of the assistants, two students, and one former student published original investigations in the course of the year.

The number of students who work at the Jefferson Physical Laboratory continues to increase slowly. In 1887–88 the number of choices of courses in physics rose from 112 to 133; but 114 of these choices were of the two lowest experimental courses, called *B* and *C*. Only 19 students in all chose courses 1, 2, 6, 7 and 9. Three of the teachers and six students were actively engaged in original research, and five papers were published during the year. The Director gives (pp. 144–149) an interesting account of these investigations. The ordinary income of the Laboratory is $3750 from the Endowment Fund, and $600 for general expenses from the College treasury, beside the annual College appropriation of about $1000 for the purchase of new apparatus, and the laboratory fees paid by the students who elect courses in physics ($890 in 1887–88). This income suffices for ordinary expenses, repairs, and service, and for a moderate annual increase of apparatus. It is not sufficient to provide any considerable increase of equipment, like a machine-shop or a larger engine-room. The President and Fellows are under great obligations to the retiring Director for the prudence and good judgment with which he has conducted the business affairs of the Laboratory during the first four years of its existence. He leaves to his successor a building in good order, collections well arranged and catalogued, and an unexpended balance of income amounting to $1718.31. His suggestion (p. 149) that exterior repairs upon the building should be paid by the Corporation will doubtless be heeded.

The income of the Observatory from permanent funds and the sale of time-signals amounted in 1887–88 to $35,772. In the annual expenditure of such a considerable sum for the advancement of astronomical science, the Director has adopted the policy of procuring the coöperation of as many other institutions and individuals as possible, and of lending the assistance of the Observatory, whether in observing or publishing, whenever there is promise of valuable results. The subject of meteorology is one in which the coöperation of many scattered observers is specially valuable. The income of the Boyden Fund has been used in part to further meteorological observations in Colorado and Peru and to publish the observations made by the U. S. Signal Service on Pike's Peak. The observations made at the Blue Hill Observatory are to be published in the Annals of the Harvard Observatory, with the coöperation of the owner of the former observatory, Mr. A. Lawrence Rotch. The observations of the 150 members of the New England Meteorological Society are also to be published in the Annals. Valuable aid has been received from several foreign observers in the preparation of the Index to Observations of Variable Stars, undertaken last year by the Observatory. These instances serve to illustrate the comprehensive policy which the Director proposes to pursue.

The most characteristic work done at the Observatory for several years past has been photometric and photographic, including the study of stellar spectra (Draper Memorial). For details of the astonishing number and variety of the observations in these departments the interesting report of the Director should be consulted (pp. 149–158).

The fire-proof building to contain the unpublished records of observations, the library, and the computing-rooms, the need of which was dwelt upon in the President's report for 1886-87, has not been provided; and the Director adverts to this need, and points out that the funds of the Observatory are not available for the purpose, and that insurance cannot be made to cover even the money loss which the destruction of the manuscript observations would inflict.

The publications of the Observatory are, of course, increasing rapidly in volume.

The building of a new section of the University Museum, adjoining the natural history laboratories, and intended for the accommodation of the departments of geography and petrography, and of geology in part, was begun last spring and is now well advanced. At the same time the Botanical Museum was erected, forming the central portion of the west front. To complete and furnish these new buildings will require a large sum of money in addition to that already provided.

The Curator of the Museum of Comparative Zoölogy vividly describes (pp. 159–162) the increase of the collections by gift, exchange, and purchase, the liberal furnishing of the material of the Museum to competent specialists, and the unusually numerous and important publications of the year, including a volume by Professor Ernest Ehlers on the Deep-Sea Florida Annelids, and two volumes by the Curator on the Three Cruises of the Blake. But the portion of his report which will fix the attention of the friends of the University and awaken their concern is that in which the Curator speaks (p. 162) of his intention to retire before long from the active charge of the Museum. Since Mr. Agassiz's appointment as Curator in 1874 he has wrought such wonders for the Museum in the way of rapid enlargement, enrichment, and rearrangement, that the University public have perhaps failed to observe that his plans also contemplated durability and economy of effort. To the end of stability the permanent endowment of $460,000, including the Agassiz Memorial Fund, was provided, the construction of the whole building was made plain and solid, the furniture and fittings were the simplest which would perfectly serve their purpose, and best of all, the scheme of the exhibitions distinctly excluded the display of large numbers or masses of like specimens and limited the contents of the exhibition cases to well selected typical objects. To the same end the boundaries of the Museum of Comparative Zoölogy have been strictly defined in the mass of the University Museum, in order that the ambition of future Curators may not extend the Museum of Zoölogy to dimensions out of proportion to its endowment, or lose sight of its primary character as an instrument of instruction and research. If, therefore, Mr. Agassiz should before many years carry into execution his present intention of retiring from the charge of the Museum, he will leave to his successor a manageable institution with well-defined limits, a distinct policy, and an income adequate for its normal expenses, including regular expenditures for research and publication.

A report from the Trustees of the Peabody Museum of American Archaeology and Ethnology is for the first time included in this Report (pp. 163–166). The principal event of the year is the erection of a large addition to the building on its west side. The original building was 80 × 40 feet; the addition is 60 × 60 feet; so that the new part is more capacious than the old. Important additions have been made to the collections during the year, partly by gift, partly by purchase, and partly as results of explorations, all of which have been systematically arranged. The cataloguing, however, is in arrears. The purchase of the Serpent Mound of Adams County, Ohio, for the Trustees, and its enclosure and preservation as a public park have led to the enactment of a State law exempting from taxation this park and all other ancient works which may be protected in the same manner.

The Museum will gladly place its materials at the disposition of competent persons who desire to pursue anthropological investigations. The resources of the Museum being inadequate for extensive explorations, the liberality of private persons has enabled the Curator to resume field-work and to obtain some important results. As the works and remains of the prehistoric peoples of America are being rapidly obliterated, it is important that the work of exploration should be promptly and thoroughly prosecuted.

Some of the gifts of the year demand special mention.

In November, 1887, the Corporation were informed by the Trustees under the will of Walter Hastings that they were ready to erect at Cambridge, according to the terms of the will, upon land to be given by the University, a College Hall for students' chambers, to cost not less than $200,000 and not more than $250,000. On the 8th of December the Trustees selected Messrs. Cabot & Chandler as the architects from a list of four firms submitted to the Trustees by the Corporation. A site on North Avenue, with Holmes Field in the rear of the building, was agreed upon and the study of the plans began at once. On the 1st of May, 1888, the contracts being ready for signature, the Trustees, preferring that the President and Fellows should sign the contracts and supervise the construction, paid $200,000 to the Treasurer of the College, and agreed to pay such further sums as might be needed, not exceeding $50,000. The construction of the building was shortly begun; but it proceeded slowly through the summer because of delays in the delivery of the peculiar bricks, plain and moulded, which were used for the entire exterior of the building. The consequence is that the building is not yet roofed in. The Hall is to be fire-proof throughout, except that the roof is to be of the construction called slow-burning; and all its internal arrangements have been carefully considered with reference to the health and comfort of its occupants. The name of the Hall is to be Walter Hastings, a name borne on the Quinquennial Catalogue in 1799, 1771, and 1730 by the father, grandfather and great-grandfather of the giver respectively.

By the will of the late Ellen Gurney, widow of Ephraim Whitman Gurney, the University received a bequest of $75,000 and the residue of her estate with directions "to apply the net income for the support in Harvard College of higher instruction in history, political science, and literature (these subjects being taken in a comprehensive sense) in such manner as may from time to time seem most expedient to the President and Fellows." The amount realized by the University from this bequest is ✓ $169,925.38. The will of Ellen Gurney was made (June 13, 1886) at the same time with that of her husband, Professor Gurney, and the two wills were in substance identical. The provisions of the will (Appendix, p. 172), therefore, express the mature judgment of both Mr. and Mrs. Gurney as to the kind of endowment most needed by the University. The subjects of instruction designated were those in which they themselves were chiefly interested; but the selection of higher instruction for endowment, rather than scholarships, libraries, collections, or equipments of any sort, and the provision that persons supported by the fund "should have their duties as instructors made sufficiently moderate in amount to give them leisure to become creditable representatives of the existing state of knowledge in their respective departments and contributors to the advancement of that knowledge" indicate what the testators thought to be the pressing needs of the University at the present time, and its sure needs in all time to come. The wills were made with very intimate knowledge of the institution to be benefited, and of all its conditions and surroundings. Both Mr. and Mrs. Gurney were life-long students; he was a College teacher for nearly thirty years; they had lived long in Cambridge, and had known intimately many University teachers and their families; and Mr. Gurney had been Dean of the College, and a Fellow of the Corporation. The bequest in the identical wills of Ellen and Ephraim Whitman Gurney was, therefore, made with the fullest possible knowledge, and sets a high example of intelligent, sympathetic, and far-seeing beneficence.

The University received during the year two wholly unrestricted gifts, — the first a bequest of $22,000 from John Cowdin of Boston, and the second a bequest of $30,000 from William Perkins of Boston. Mr. Cowdin was a prudent and successful man of business, who had no issue, and no connection with the University through his ancestry. Two nephews had within recent years been members of Harvard College. He was a valued adherent and supporter of the Old South Church. Mr. Perkins was a highly respected merchant whose three sons, James Amory, William Edward, and Robert Shaw, all graduated at Harvard College, and all died before him. The oldest son (A.B. 1857) was killed at Fort Wagner, S. C., the second (A.B. 1860), who served three years during the civil war and was wounded at Chancellorsville, died at Boston in 1879, and the third (A.B. 1864) died in 1873. The father made his bequest to the College in memory of his sons.

Mr. Henry Reginald Astor Carey of New York, who was a special student in the College in 1886–87, gave the President and Fellows $25,000 on Nov. 14, 1887, "to be used in building Fives Courts for the use of the University, especially for the Baseball Nine, either as attached to the Gymnasium, or as a separate building, as the Corporation may decide." The construction of the building has been delayed by difficulties in deciding on the best mode of carrying out Mr. Carey's generous intentions.

Members of the Class of 1856 gave to the President and Fellows $6000 as a permanent fund the income of which "is to be used for the publication from time to time, in a serial form, of contributions to Classical learning by members of the University or graduates of the same, and such other contributions to Classical learning as it may be deemed advantageous to the University to publish." This is the second publication fund which the University has received, the first being the John Eliot Thayer fund of $15,000 for publication in the department of political economy. The Quarterly Journal of Economics, issued with the help of the Thayer fund, has been so successful and so obviously useful to the University, that the Corporation hope for the establishment of publication funds in several other departments. The prospect of publication in University journals, or serials, devoted to the serious treatment of serious subjects will stimulate teachers and advanced students to take part in the discussions of the day, and to put their work into forms fit for publication.

The increase in the number of students for 1887–88 was unusually large (124), the departments which made the principal gains being the College, the Law School, and the Graduate Department. Financially also the year was a prosperous one, every department except the Veterinary School showing a surplus of receipts over expenses (Treasurer's report, pp. 4–6).

The attention of the Overseers is respectfully invited to the following reports upon the several departments and scientific establishments.

CHARLES W. ELIOT, *President.*

CAMBRIDGE, January 7th, 1889.

REPORTS OF DEPARTMENTS.

THE COLLEGE.

To the President of the University:

Sir, — I have the honor to submit the following report on the administration of the College for the academic year 1887–88. During almost the whole period embraced in this report I was absent on leave. The Acting Dean for the year was Professor C. J. White, whose long association with the office as Registrar had made him entirely familiar with its duties.

The whole number of students in attendance at the beginning of the year was eleven hundred and forty, distributed as follows: —

Seniors	237
Juniors	214
Sophomores	251
Freshmen	295
Whole number of undergraduates	997
Special Students	143
Total	1140

Of the Seniors on the roll in October, one who had leave of absence for the year was unable to return to College to take the examinations. Two were prevented by sickness from completing the examinations, and seven failed to pass. One died in February. Three withdrew voluntarily in the course of the year, one was dismissed, and one was expelled. The remaining two hundred and twenty-one, together with eleven Juniors who had fulfilled all the requirements for graduation, and seven members of previous classes, who had made up the deficiencies which had prevented them from graduating in regular course, were admitted to the degree on Commencement day.

The number of Seniors who have graduated in each of the last six years, with the number in each class who have failed to graduate owing to deficiencies of scholarship, are given in the following table: —

	1883.	1884.	1885.	1886.	1887.	1888.
Graduated	203	192	181	221	225	221
Failed	..	2	3	4	7	7

The aggregate losses and gains of the other three classes of last year, from October, 1887, to October, 1888, are shown in the following table: —

	October, 1887.		Loss.	Gain.	October, 1888.	
Class of 1889 . .	(Juniors)	214	34	30	(Seniors)	210
Class of 1890 . .	(Sophomores)	251	34	35	(Juniors)	252
Class of 1891 . .	(Freshmen)	295	70	39	(Sophomores)	264

These losses and gains of the several classes are of course not altogether losses or gains to the College, a considerable portion of them being due to the transfer of students from one class to another, as will appear from the next table, which gives the nature of the losses and gains in detail.

	Class of 1889.	Class of 1890.	Class of 1891.	Total for three Classes.
LOSSES.				
Left College without completing the year .	9	11	23	43
Left College after completing the year . .	7	4	9	20
Removed to a lower class	4	9	29	42
Advanced to a higher class	11	8	9	28
Became Special Students	3	2	. .	5
Total loss	34	34	70	138
GAINS.				
From higher classes	1	4	9	. .
From lower classes	8	9	. .	. .
Newly admitted	21	22	30	73
Total gain	30	35	39	104
Net loss	4	. .	31	34
" gain	. .	1	. .	. .

Among the forty-three students who left College without completing the work of the year are included four whose incomplete record was due to their failure to pass the examinations. Of the remaining thirty-nine, one died in March and twelve were obliged by ill health to discontinue their studies. Five were dismissed or expelled, and one who was suspended in January did not return. Two withdrew owing to lack of money, and two others to go into business. Sixteen withdrew for various other reasons of a personal nature. Four of those whose withdrawal was due to the state of their health and one other have returned to College this year.

Of the twenty students who completed the work of the year, but have not returned to College, three were prevented by poor health, and one died at the end of the summer vacation. Two were former members of the class of 1888, who have so far made up their deficiencies that they can complete the requirements for the degree without further residence. One has entered the Medical School. Three were not permitted to return. Two alleged lack of means as their reason for leaving, and eight withdrew without stating the cause. Three of these eight expressed the intention of returning next year.

The forty-two students removed to lower classes, together with the four mentioned above, who would have been placed in lower classes had they returned to College, constitute the aggregate loss of the three classes due to failure in scholarship. The following table exhibits these results in comparison with those of previous years: —

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Removed to lower classes .	18	14	7	23	33	33	61	46
Withdrawn during the year	7	3	5	2	12	3	4	. .
Total	25	17	12	25	45	36	65	46
Whole number of students in the three classes . .	633	641	682	695	745	726	745	760

Of the twenty-eight students advanced to higher classes, two were Juniors who had for special reasons been permitted by the Faculty to qualify themselves for the degree at the end of the Junior year. One Sophomore and one Freshman, who had begun the year with some work to their credit, have succeeded by their work during the year in gaining admission to the Senior and Junior classes respectively. The remaining twenty-four were former members of the classes to which they were advanced, having so far made good their deficiencies as to be entitled to this promotion under the rules. Nine of them were Juniors who thus succeeded in graduating with their original class.

The seventy-three persons newly admitted to the three classes under consideration include eleven students who had previously been members of the College, and resumed their connection after an interval of absence. Of these, two passed the requisite examinations and rejoined their former classes; the rest took up their studies with lower classes. Four candidates were admitted to the Sophomore class on passing the usual examinations. Twenty-seven Special Students were admitted, — four to the Senior, nine to the Junior, and fourteen to the Sophomore class, — having given satisfactory proof of their qualifications by work done in College; one of those admitted Sophomore had, however, passed the regular admission examinations at the end of a year of residence. Four other Special Students were admitted, — two to the Senior and two to the Junior class, — partly on the basis of work previously done at other colleges; and twenty-seven graduates or students from the higher classes of other colleges or scientific schools were admitted directly, — twelve to the Senior, nine to the Junior, and six to the Sophomore class.

The new Freshman class numbers three hundred and nine, made up as follows: —

Admitted in 1888	
by examination	249
from other colleges	5
from Special Students	3
Previously admitted	23
Removed from a higher class	29
Total	309

The number of Special Students in attendance at the beginning of the year, and the changes in their number down to October, 1888, are given in the following table: —

In attendance October, 1887		143
Registered later in the year		8
		151
Transferred to a College class during the year	8	
Withdrew without taking any final examination	29	
		32
Took final examinations in one or more studies		119
Left College before the end of the year	12	
Left College at the end of the year	29	
Admitted to a College class	27	
		68

Returned as Special Students, September, 1888	51
Readmitted	5
Newly admitted, September and October, 1888	89
Present number	145

Increase, 2.

Combining and comparing the statistics which have been given, we obtain the following results: —

Number of students in attendance, October, 1888: —

Seniors	210
Juniors	252
Sophomores	264
Freshmen	309
Whole number of undergraduates	1035
Special Students	145
Total	1180

Whole number of undergraduates, October, 1887	997
" " " " 1888	1035
Increase	38

Whole number of students, October, 1887	1140
" " " " 1888	1180
Increase	40

The June examinations for admission were held as heretofore, in Cambridge, Andover, and Quincy, in this State; in Exeter, N. H., New York, Philadelphia, Cincinnati, Chicago, St. Louis, and San Francisco; and, for the first time this year, in Concord, N. H., and Albany, N. Y. The European examinations were held in Bonn, Germany. The September examinations were held in Cambridge only.

The examinations were this year for the first time held exclusively on the new plan announced in 1886. The whole number of candidates who offered themselves to be finally examined for admission this year was three hundred and fifty-one, or ten less than in 1887. Seventeen of these for various reasons took examinations in only a small number of subjects; and nineteen others, who took a part of the examination in June with the intention of completing it in September, were so unsuccessful that they abandoned the attempt to pass this year; leaving the number of candidates who completed the examination three hundred and fifteen. The use made by these of the privilege of dividing the examination was as follows: —

Number of candidates who	
Divided the examination between two years	226
" " " " June and September	50
Took the whole examination at one time	39
Total	315

The statistics of the examinations which I now submit relate, in the first place, exclusively to these three hundred and fifteen candidates, without regard to the time when they were examined, and are designed to show the character of their preparation for college, — the studies they pursued in their preparatory course, and the quality of their work as tested by the examinations.

It will be remembered that the studies which form the subjects of the examination are arranged in two groups, called *elementary* and *advanced.* Under the former are included English, Greek, Latin, German, French, History, Algebra, Plane Geometry, and Physical Science. In two of these studies the candidate has a choice of subjects: in History, between Greek and Roman history on the one hand, and the history of the United States and of England on the other; and in Physical Science, between a course in descriptive physics and astronomy and one in experimental physics. In both cases the first alternative is identical with the requirement in the same study under the old method, except that in Physical Science the former requirement has been increased by the addition of astronomy. In these two studies the candidates under consideration presented themselves for examination as follows: —

		Per cent.
In the history of Greece and of Rome	281	89
" " " " the United States and of England	31	10
" neither alternative	3	
	315	
" descriptive physics and astronomy	212	67
" experimental physics	93	30
" neither alternative	10	
	315	

The *advanced studies* of the admission examinations embrace six courses: Greek, Latin, German, French, Physics, and Chemistry; and six 'half-courses': Greek Composition, Latin Composition, Logarithms and Trigonometry, Solid Geometry, Analytic Geometry, and Mechanics; each of the former being identical with a full course, and each of the latter with a half-course, taught in College.

Two of the elementary studies, German and French, are also taught in College as full courses, and a candidate is permitted to postpone the study of one of these languages to his Freshman year, provided he present in his examination for admission one advanced course in addition to the two which are required of all candidates. A candidate may also omit elementary Greek or Latin, provided he substitute for it two advanced courses (or their equivalent), one of which, however, must be in mathematics and the other in either mathematics or physical science. With the exception of this restriction on those who omit Greek or Latin, the candidate's choice of advanced studies is entirely free. The number of courses he must choose is: —

(*a*)	If he presents all the elementary studies,	2 courses.
(*b*)	" omits German or French,	3 "
(*c*)	" " Greek or Latin,	4 "
(*d*)	" " German or French and Greek or Latin,	5 "

The extent to which each of these four plans of preparation for College was used by the candidates of 1888 is shown in the following table: —

Number of candidates who presented themselves on			Per cent.
Plan *a*		99	31.43
" *b*, omitting German	166		
" " " French	35		
" " " both	2		
Total, plan *b*		203	64.44
" *c*, " Greek	11		
" " " Latin	0		
Total, plan *c*		11	3.50
" *d*, " Greek and German	2		
" " " " " French	0		
" " " Latin " German	0		
" " " " " French	0		
Total, plan *d*		2	0.63
Whole number of candidates		315	

The following positive statistics, deduced from the above table, may be of interest: —

Number of candidates presenting		Per cent.
Elementary Greek	302	95.87
" Latin	315	100.
" Greek and Latin	302	95.87
" Greek without Latin	0	
" Latin without Greek	13	4.13
" German	145	46.03
" French	278	88.25
" German and French	110	34.92
" German without French	35	11.11
" French without German	168	53.33

To show the extent to which the several *advanced* studies entered into the preparation of these candidates, I give first the number and the percentage of candidates presenting themselves in each study: —

		Per cent.
Whole number of candidates	315	
Number offering Greek	256	81
" " Latin	301	96
" " Greek Composition	198	63
" " Latin "	223	71
" " German	43	14
" " French	61	19
" " Logarithms and Trigonometry	48	15
" " Solid Geometry	53	17
" " Analytic Geometry	12	4
" " Mechanics	11	4
" " Physics	9	3
" " Chemistry	22	7

In the next table I have placed the above percentages side by side with those for the 'elective studies' of the old method for the past four years, so far as those studies are represented in our present 'advanced studies.' In Greek, Latin, and Mathematics the correspondence is sufficiently exact, the chief difference being that the studies in each of these departments could not be offered separately under the old method. In Physical Science, on the other hand, there is a wide divergence between the methods of study enforced by the examination. Under the old method a certain acquaintance with physics and chemistry or physics and botany, gained from text-books or lectures, was all that was expected; while the present requirements in Advanced Physics and in Chemistry demand a course of preparation in which the most important element is the candidate's own work in the laboratory.

	Old Method.				New Method.
	1884.	1885.	1886.	1887.	1888.
Percentage of candidates offering					
Greek	80	83	83	82	81
Greek Composition	80	83	83	82	63
Latin	95	96	98	97	96
Latin Composition	95	96	98	97	71
Logarithms and Trigonometry	19	17	18	19	15
Solid Geometry	19	17	18	19	17
Physical Science	15	17	15	15	
Physics	. .	. .	. .	. .	3
Chemistry	. .	. .	. .	. .	7

So far as we may judge from this comparison, — and of course the indications of a single year must be used with caution ,— the classics have not suffered any perceptable loss, except that a good proportion of the candidates who offered Greek and Latin availed themselves of the liberty to substitute some other study for practice in Greek and Latin Composition, or in one of these. What these substitutions were may be seen in the following tables especially in the combinations of three courses under plans *a* and *b*. In Mathematics, likewise, it may be said that there has been no falling off, when we consider the proportion of candidates who presented the new subjects on the list in that department, Analytic Geometry and Mechanics. In Physical Science, on the other hand, the loss of percentage is very marked. Whether it is a loss in reality is another question. By no means all of those who prepared themselves on the old requirement in this department were in any true sense students of physical science. With too many it was merely a convenient means of satisfying the requirements for admission, a substitute for more difficult study. The number of candidates in Physics and Chemistry this year is certainly as large as could be expected, in view of the present poor equipment of the schools for teaching these sciences in the way that we now demand.

The following tables are designed to show the various ways in which the advanced studies have been combined in the preparation of three hundred and twelve of these candidates, — three, whose list of advanced studies was incomplete, having been omitted from the account. The figures which are repeated in each line of the table indicate the number of candidates who presented in combination the studies under which the figures are placed. Thus, under plan *a*, thirty-one candidates presented Greek and Latin, two presented Latin with Greek and Latin Composition, one presented Latin, Latin Composition, and Solid Geometry, &c. Full courses are distinguished by capital letters and figures in bold-face type.

Plan *a*. 99 Candidates.	GREEK.	LATIN.	Greek Composition.	Latin Composition.	GERMAN.	FRENCH.	Trigonometry.	Solid Geometry.	Analytic Geometry.	Mechanics.	PHYSICS.	CHEMISTRY.
2 Courses.	31	31										
		2	2	2								
		1		1				1				
		1			1							
		4				4						
		1									1	
		4					4	4				
		2					2		2			
					4	4						
					2							2
						1	1	1				
2½ Courses.	1	1	1									
	2	2		2								
	1		1				1	1				
3 Courses.	6	6	6	6								
	2	2			2							
	1	1				1						
	1	1					1	1				
	1	1									1	
		1	1	1	1							
		1		1			1	1	1			
		1			1	1						
		2			2		2	2				
					1	1						1
3½ Courses.	1	1		1	1							
	1	1		1							1	
	1	1					1	1		1		
	2	2								2	2	
		1		1	1	1						
4 Courses.	5	5	5	5	5							
	3	3	3	3		3						
	1	1	1	1			1	1				
	1	1		1		1		1				
	1	1			1	1						
	1	1			1						1	
		1	1	1	1	1						
5 Courses.	2	2	2	2	2		2	2				
5½ Courses.	1	1	1	1	1	1		1				
6 Courses.	2	2	2	2	2	2	2	2				
	1	1		1	1		1	1		1	1	
Number of Candidates in each study	69	90	26	33	30	22	19	20	3	4	7	3

Plan *b*. 200 Candidates.	GREEK.	LATIN.	Greek Composition.	Latin Composition.	GERMAN.	FRENCH.	Trigonometry.	Solid Geometry.	Analytic Geometry.	Mechanics.	PHYSICS.	CHEMISTRY.
3 Courses.	144	144	144	144								
	3	3		3				3				
	3	3			3							
	7	7				7						
	1	1					1	1				
	1	1					1		1			
	2	2										2
		1	1	1	1							
		2	2	2		2						
		2	2	2								2
		1		1	1		1					
		3		3		3		3				
		2				2	2	2				
		1					1	1	1	1		
							1	1	1	1		1
3½ Courses.	1	1	1		1							
	3	3		3		3						
	1	1		1								1
4 Courses.	1	1	1	1	1							
	9	9	9	9		9						
	6	6	6	6			6	6				
	1	1	1	1			1		1			
	3	3	3	3								3
5 Courses.	1	1	1	1		1	1	1				
Number of Candidates in each study	187	199	171	181	7	27	15	18	4	2	0	9
Plan *c*. 11 Candidates.												
4 Courses.		1				1	1	1				1
					1	1	1	1				1
						1	1	1	1	1		1
4½ Courses.		1		1	1		1	1				1
		1		1		1	1	1	1	1		
		1		1		1	1	1			1	
		1		1		1	1	1				1
					1	1	1	1		1		1
5 Courses.		1			1	1	1	1				1
					1	1	1	1	1	1		1
5½ Courses.		1		1	1	1	1	1			1	
Number of Candidates in each study	0	7	0	5	6	10	11	11	3	4	2	8
Plan *d*. 2 Candidates. 5 Courses.		2		2		2	2	2	2			2

The success with which this body of candidates sustained the test of the examinations is shown by the next two tables, of which the first gives the percentage of failure in each subject.

PERCENTAGE OF CANDIDATES FAILING IN EACH STUDY.

Elementary Studies.		Advanced Studies.	
English	15	Greek	19
Greek	3	Latin	9
Latin	8	Greek Composition	16
German	10	Latin "	26
French	14	German	21
History (Greek and Roman)	5	French	23
" (American and English)	8	Logarithms and Trigonometry	71
Algebra	22	Solid Geometry	19
Plane Geometry	21	Analytic Geometry	33
Physical Science (Descriptive)	16	Mechanics	73
Physics (Experimental)	18	Physics	22
		Chemistry	5

The second table gives the general result of the examination, compared with those of previous years.

	1885.	1886.	1887.			1888.
			Old Method.	New Method.	Total.	
Candidates examined	319	308	247	80	327	315
" admitted	288	287	235	66	301	301
" " clear	129	111	89	21	110	125
" rejected	31	21	12	14	26	14
Per cent "	9.7	6.8	4.9	17.5	8.	4.4

Of the three hundred and one candidates admitted this year, two hundred and forty-nine entered the Freshman class in September. Three, by passing further examinations, and one in virtue of work done as a Special Student, were admitted to the Sophomore class. Of the remaining forty-eight, twenty-one, on account of their youth, or poor health, or lack of money, have postponed their entrance until another year; ten others gave notice that 'they did not propose to register this year'; two have gone to other institutions. The remaining fifteen have not been heard from.

Besides the three hundred and fifteen candidates for admission, whose record is exhibited in the preceding statistics, three hundred and fifty-three persons were examined this year in various subjects as candidates for a preliminary certificate, an increase of thirty-two over last year. Both of these classes of candidates are included in the following table, which gives for each study the proportion of candidates examined, and the proportion of failure among those examined, in that study this year. With these are placed the corresponding statistics for the two hundred and forty-five preliminary candidates who were examined on the present method in 1887. The statistics of the candidates in the Final examination of 1887 are not included because the great majority of them were examined by the old method. It is perhaps unnecessary to point out that the only correspondence to be looked for in the table is between the record of the preliminary examination of one year and the final of the next, and that this correspondence cannot, for obvious reasons, be exact.

Whole number of candidates: 1887, Preliminary . . . 245 1888, " . . . 353 1888, Final 315	Percentage of the whole number of candidates who were examined in each study.			Percentage of failure among those examined in each study.		
	1887.	1888.		1887.	1888.	
	Prelim.	Prelim.	Final.	Prelim.	Prelim.	Final.
ELEMENTARY STUDIES.						
English	57	6	72	38	50	20
Greek	78	80	40	17	24	7
Latin	98	96	36	21	23	8
German	15	25	36	8	27	12
French	70	72	43	14	31	29
History (Greek and Roman)	76	75	38	13	12	13
" (Am. and English)	10	11	6	25	32½	6
Algebra	89	88	51	37	47	43
Plane Geometry	62	51	79	56	41	27
Physical Sci. (Descriptive) .	18	27	53	49	39	20
" " (Experimental)	16	14	20	12.5	8	27
ADVANCED STUDIES.						
Greek	4.5	5	79	27	58	20
Latin	17	16	90	52	24	9
Greek Composition	20	19	52	33	36	19
Latin Composition	13	11	64	45	50	28
German	8	3	12	14	33	24
French	7	7	16	25	25	28
Logarithms and Trigonom.	1	1	15	100	67	71
Solid Geometry	4	3	15	11	50	21
Analytic Geometry.	0.4	0.3	3	0	0	40
Mechanics	0	0	3	. .	. .	73
Physics	0	0	3	. .	. .	22
Chemistry	0.4	3	7	0	0	5

The next table shows the general results of the preliminary examinations under the present system in 1887 and 1888, and those under the old method in the three preceding years. Under the new method

The success with which this body of candidates sustained the test of the examinations is shown by the next two tables, of which the first gives the percentage of failure in each subject.

PERCENTAGE OF CANDIDATES FAILING IN EACH STUDY.

Elementary Studies.		Advanced Studies.	
English	15	Greek	19
Greek	3	Latin	9
Latin	3	Greek Composition	16
German	10	Latin "	26
French	14	German	21
History (Greek and Roman)	5	French	23
" (American and English)	3	Logarithms and Trigonometry	71
Algebra	22	Solid Geometry	19
Plane Geometry	21	Analytic Geometry	33
Physical Science (Descriptive)	16	Mechanics	73
Physics (Experimental)	18	Physics	22
		Chemistry	5

The second table gives the general result of the examination, compared with those of previous years.

	1885.	1886.	1887.			1888.
			Old Method.	New Method.	Total.	
Candidates examined	319	308	247	80	327	315
" admitted	288	287	235	66	301	301
" " clear	129	111	89	21	110	125
" rejected	31	21	12	14	26	14
Per cent "	9.7	6.8	4.9	17.5	8.	4.4

Of the three hundred and one candidates admitted this year, two hundred and forty-nine entered the Freshman class in September. Three, by passing further examinations, and one in virtue of work done as a Special Student, were admitted to the Sophomore class. Of the remaining forty-eight, twenty-one, on account of their youth, or poor health, or lack of money, have postponed their entrance until another year; ten others gave notice that 'they did not propose to register this year'; two have gone to other institutions. The remaining fifteen have not been heard from.

Besides the three hundred and fifteen candidates for admission, whose record is exhibited in the preceding statistics, three hundred and fifty-three persons were examined this year in various subjects as candidates for a preliminary certificate, an increase of thirty-two over last year. Both of these classes of candidates are included in the following table, which gives for each study the proportion of candidates examined, and the proportion of failure among those examined, in that study this year. With these are placed the corresponding statistics for the two hundred and forty-five preliminary candidates who were examined on the present method in 1887. The statistics of the candidates in the Final examination of 1887 are not included because the great majority of them were examined by the old method. It is perhaps unnecessary to point out that the only correspondence to be looked for in the table is between the record of the preliminary examination of one year and the final of the next, and that this correspondence cannot, for obvious reasons, be exact.

Whole number of candidates: 1887, Preliminary . . . 245 1888, " . . . 353 1888, Final 315	Percentage of the whole number of candidates who were examined in each study.			Percentage of failure among those examined in each study.		
	1887.	1888.		1887.	1888.	
	Prelim.	Prelim.	Final.	Prelim.	Prelim.	Final.
ELEMENTARY STUDIES.						
English	57	6	72	38	50	20
Greek	78	80	40	17	24	7
Latin	98	96	36	21	23	8
German	15	25	36	8	27	12
French	70	72	43	14	31	29
History (Greek and Roman)	76	75	38	13	12	13
" (Am. and English)	10	11	6	25	32½	6
Algebra	89	88	51	37	47	43
Plane Geometry	62	51	79	56	41	27
Physical Sci. (Descriptive) .	18	27	53	49	39	20
" " (Experimental)	16	14	20	12.5	8	27
ADVANCED STUDIES.						
Greek	4.5	5	79	27	58	20
Latin	17	16	90	52	24	9
Greek Composition	20	19	52	33	36	19
Latin Composition	13	11	64	45	50	28
German	3	3	12	14	33	24
French	7	7	16	25	25	28
Logarithms and Trigonom.	1	1	15	100	67	71
Solid Geometry	4	3	15	11	50	21
Analytic Geometry.	0.4	0.3	8	0	0	40
Mechanics	0	0	3	. .	. .	73
Physics	0	0	8	. .	. .	22
Chemistry	0.4	3	7	0	0	5

The next table shows the general results of the preliminary examinations under the present system in 1887 and 1888, and those under the old method in the three preceding years. Under the new method a candidate, in order to secure a certificate, must pass on studies occupying at least five hours on the examination programme, on which the time assigned to the several studies is as follows: English, an hour and a half (but the fraction is neglected in the table); elementary Greek and Latin, and advanced Greek, Latin, German, French, Physics, and Chemistry, two hours each; all other studies, one hour each.

	Old Method.			New Method.	
Number of candidates who passed in studies amounting to	1884.	1885.	1886.	1887.	1888.
Five hours	39	24	36	23	34
Six "	38	35	37	32	53
Seven "	57	51	55	45	68
Eight "	72	77	84	54	60
Nine "	23	24	46	16	24
Ten "	15	29	32	11	12
Eleven "	2	5	7	7	1
Twelve "	..	2	2	3	2
Thirteen "	..	1	1	0	2
Fourteen "	..	..	..	1	..
Received certificates	246	248	283	192*	256
Failed to pass in five hours	62	55	43	53	97
Whole number of candidates	308	303	326	245*	353

The general order of the College throughout the year was excellent, although the Faculty was called upon to deal with an unusual number of cases of discipline, some of them of an exceptionally disagreeable character. The penalty of expulsion, of which there had been only one instance in the preceding ten years, was applied in six cases, — to two Seniors for gambling, to one Sophomore and two Freshmen for stealing in the Gymnasium, and to one Special Student for forgery and falsehood. For ungentlemanly conduct of an aggravated character, one Senior was dismissed and another was suspended from March 20 until Commencement day. Three Freshmen were dismissed for dishonesty in connection with certain written exercises, but in two of these cases the penalty was subsequently changed to suspension till the end of the year, — a period of five months. One Special Student who was deprived of his privileges in October for giving a drinking party, was permitted to return in the second half-year.

---

* In 1887 seventy-six candidates were examined by the old method, of whom fifty-nine received certificates crediting them with subjects on the new list corresponding to those on which they had passed. The whole number of those who received certificates in 1887 was therefore 251.

The instruction given in the College in the year 1887–88 is set forth in detail in the tables on the following pages, which contain a statement of the work done in each course, the names of the instructors, the number of hours a week of instruction, and the number of students of various classes and departments,* as well as the total number of students, in regular attendance. To furnish a complete view of the scheme of instruction, all the courses are included in the list, — those omitted for the year as well as those actually given. Of the omitted courses, those which were not offered are distinguished by a bracket ([ ) ; the rest were withdrawn when it appeared that they had not been taken by a sufficient number of competent students. A star (*) indicates that a course could be taken only with the previous consent of the instructor.

In addition to these courses, which may be counted towards the degree of Bachelor of Arts, instruction in Elocution was given to voluntary classes by Mr. Hayes. Evening Readings were given as follows: from the Hebrew prophets, five readings by Professor Lyon; from Arabic literature, two readings by Mr. Jewett; from the Odyssey, six readings by Professor Palmer; from modern German literature, seven readings by Professor Francke and Mr. Hochdörfer. Besides these, six afternoon readings from modern French literature, given by Professor Bôcher and Messrs. Sanderson and Sumichrast for the benefit of the library of the Society for the Collegiate Instruction of Women, were open without charge to the members of the University.

The following public lectures and addresses were delivered during the year in College lecture rooms: —

Beirût and its Surroundings, and Cairo (two illustrated lectures), by Mr. Jewett.

Literature as a Profession, by T. W. Higginson, Esq., of Cambridge.

The Training of the College and the Law School as a preparation for the Profession of the Law, by Edwin H. Abbot, Esq., of Milwaukee.

The Uses and Limitation of Short Hand for College Students, by Mr. Babbitt.

The College Library: How to use the Card Catalogue and other Aids in finding Books, by Mr. William C. Lane.

The Late Crisis in France, by Professor Cohn.

Recent Large Steel Bridges (illustrated), by Mr. T. C. Clarke.

---

* To designate the various kinds of students in the several courses, the following abbreviations are used: Gr. for Graduate Student, Se. for Senior, Ju. for Junior, So. for Sophomore, Fr. for Freshman, Sp., for Special Student, Sc. for Scientific Student, Di. for Divinity Student, Law for Law Student, Me. for Medical Student, Ve. for Student in Veterinary Medicine, and Bu. for Student of the Bussey Institution.

COURSES OF INSTRUCTION, 1887–88.

Instructors.	COURSES.	Hours per week.	Students.	Total number of students.
	SEMITIC LANGUAGES.			
Mr. Jewett	1. Hebrew. — Harper's Introductory Hebrew Method and Manual. — Harper's Elements of Hebrew. — Genesis (Chapters I.–VIII., XXXVII., and XXXIX.–L.). — Ruth	3	1 Se., 1 Fr., 1 Sp., 4 Di.	7
Prof. Lyon	2. Hebrew (Second Course). — Reading from the Old Testament (2d Kings; Isaiah I.–XXX.; Job I.–XI.; the alphabetic Psalms). — Remarks on grammar, criticism, and literature	2	1 Se., 1 Ju.	2
Prof. Lyon	3. Classical Aramaic (Syriac)	2 1st half-year	Omitted in 1887–88.	
Mr. Jewett	10. Jewish Aramaic	2 2d half-year	Omitted in 1887–88.	
Prof. Lyon	4. Assyrian. — Lyon's Assyrian Manual. — Practice in translating into Assyrian	2	Omitted in 1887–88.	
Prof. Lyon	5. Assyrian (Second Course). — Cuneiform Inscriptions of Western Asia (Interpretation of selections from Vols. I., IV., V.: historical inscriptions of Sennacherib, Esarhaddon, Assurbanipal; Account of the Deluge; Babylonian Penitential Psalms). — Botta's Monument de Ninive (Sargon's wars in Palestine and Chaldea)	2	3 Gr.	3
Prof. Lyon	11. Assyrian (Third Course)	1	Omitted in 1887–88.	
Prof. Lyon	6. Babylonian-Assyrian History from native sources, with comparison of the Greek and Roman writers	1	Omitted in 1887–88.	

Mr. Jewett	7. Arabic. — Lansing's Arabic Grammar. — Selections from the smaller Arabic Chrestomathy of the Beirut Jesuit Fathers	2	1 Gr.	1
Mr. Jewett	8. Arabic (Second Course). — Selections from the smaller Arabic Chrestomathy of the Beirut Jesuit Fathers. — Selections from the Koran	2	2 Gr.	2
Mr. Jewett	9. Ethiopic	1	Omitted in 1887–88.	
Prof. Toy	[12. General Semitic Grammar	1	Omitted in 1887–88.	
	INDO-IRANIAN LANGUAGES.			
Prof. Lanman	1. Sanskrit. — Perry's Sanskrit Primer (lessons 1–25). — Whitney's Sanskrit Grammar. — Lanman's Reader (pages 1–68, all of the classical part). Panchatantra, Book II. (about 25 pages)	3	1 Gr.	1
Prof. Lanman	2. Sanskrit (Advanced Course) — Kathā-sarit-sāgara (50 pages). — The Hitopadeça. Kālidāsa's two dramas, Çakuntalā and Urvaçi. — About 9000 lines, in all, were read	3	1 Gr.	1
Prof. Lanman	3. Hindu Philosophy. The Bhagavad Gitā. — Deussen's Uebersicht der Vedānta-lehre. — The Vedānta-sāra. — The Kaṭha Upanishad	3	1 Ju.	1
Prof. Lanman	[4. Old Iranian. — Reading of the Avesta	3	Omitted in 1887–88.	
Prof. Lanman	5. Pali	3	Omitted in 1887–88.	
	GREEK.			
Dr. Morgan	*A*. Herodotus (Instruction in reading the easier parts at sight, with some study of Greek History). — Homer's Iliad (Books I., II., III., and V., with passages selected for translation at sight). — Study of Homeric dialect, syntax, and inflexion	3	1 Se., 1 Ju., 15 Fr., 6 Sp.	23
Profs. J. W. White and Wright and Drs. Fowler and Morgan	*B*. Lysias (selected orations). — Plato (Apology and Crito). — Homer (Odyssey Books VII.–XII.). — Euripides (Medea). — Reading at sight. — Goodwin's Moods and Tenses	3	1 Se., 9 So., 59 Fr., 2 Sp. (Three sections)	71

COURSES OF INSTRUCTION. — CONTINUED.

Profs. J. W. White and Wright and Drs. Fowler and Morgan	*C.* Lysias (six orations). — Plato (Apology and Crito). — Homer (Odyssey, Books I.-IV.). — Aristophanes (Clouds). — Goodwin's Moods and Tenses. — Study of legal antiquities. — Reading at sight	3	2 So., 39 Fr., 3 Sp. (Two sections)	44
Dr. Morgan	*E.* Greek Composition (First Course). — Sidgwick's Greek Prose Composition, Parts I. and II. — Translation of assigned exercises, and, in the class-room, of exercises at sight	3 a fortnight	1 So., 28 Fr.	29
Dr. Fowler	1. Sophocles (Ajax). — Aristophanes (Acharnians). — Kynaston's Greek Elegiac Poets (selections). — Thucydides (Book V., with parts of I. and IV.)	3	1 Ju., 10 So., 1 Fr.	12
Prof. J. W. White	2. Sophocles (Oedipus Tyrannus). — Thucydides (selections from Books VI. and VII.). — Aristophanes (Birds). — Lectures on literature and antiquities, and practice in translation at sight	3	6 Ju., 44 So., 1 Fr.	51
Prof. Wright	3. Greek Composition (Second Course). — Exercises from Sidgwick's Greek Prose Composition, Parts II. and III. — Oral translation at sight from and into Greek	1	2 Ju., 23 So.	25
Mr. Parker	5. Herodotus (Books V.-IX.). — Xenophon (selections from the minor works). — Instruction in reading at sight. — Lectures and recitations, with frequent written translations	3	4 Se., 3 Ju., 7 So., 1 Fr., 1 Sp.	16
Prof. Goodwin	6. *First half-year:* Demosthenes (de Falsa Legatione and de Corona). — Aeschines (in Ctesiphontem). — Lectures on the historical and legal questions suggested by the orations read	3	1 Gr., 2 Se., 10 Ju., 2 So.	15
Prof. Wright	*Second half-year:* Aeschylus (Septem contra Thebas). — Sophocles (Antigone). — Aristophanes (Ranae). — Lectures on the Greek theatre. — Studies on the Septem of Aeschylus (scholia, manuscripts, special topics, with written English versions)			

Prof. Wright	7. Greek Composition (Third Course). — Written translation in the style of Plato and of Demosthenes. — Minute study of classical models. — Greek versions of specimens of standard English (philosophical and rhetorical)	1	2 Gr., 3 Se., 2 Ju.	7
Prof. Goodwin	8. Plato (Republic). — Aristotle (Ethics, Books I.-IV. and X.) — Lectures on various questions suggested by the works read, and on the history of Greek philosophy	3	5 Gr., 9 Se., 3 Ju.	17
Prof. Goodwin	9. Aeschylus (Agamemnon and Eumenides)	3 2d half-year	4 Gr., 4 Se., 1 Ju.	9
Prof. Goodwin	[10. The Life of the ancient Athenians, described and illustrated from the monuments	3	Omitted in 1887–88.	
Prof. Wright	12. Three Centuries of Greek History (B.C. 600–300). — Chronological survey, from the sources. — Lectures on aids and on sources (literary and monumental), and on the development of political institutions. — Studies in the age of Pericles (biographical and archaeological), with special reports, theses, and collateral reading	3	3 Gr., 6 Se., 6 Ju., 1 So.	16
Prof. Allen	*11. Introduction to the Critical Study of Homer. — Lectures on the history of Homeric studies and of the Homeric text, and on Homeric versification and language. — Investigation of special questions under the direction of the Instructor. — Careful study of selected passages of the Iliad	2	5 Gr., 1 Se.	6
Prof. Goodwin	[*13. Aristotle (Politics)	2 1st half-year	Omitted in 1887–88.	
Prof. Goodwin	*14. Thucydides (selections)	2 2d half-year	3 Gr.	3
Prof. Goodwin	*15. Lectures on the Political and Legal Antiquities of Athens. — Reading of several legal Orations of Demosthenes (against Aristocrates, against Aplobus I. and II., against Ovetor I., and against Eubulides)	3	2 Gr., 2 Se.	4

COURSES OF INSTRUCTION. — CONTINUED.

LATIN.

Dr. Richardson	*A.* Cicero (six orations). — Sallust (Jugurtha). — Virgil (Aeneid, Book VIII.). — Reading at sight	3	3 Se., 1 Ju., 8 Fr., 7 Sp.	19
Prof. Preble	*B.* Livy (Books XXXV. and XXXVII.). — Cicero (Laelius). — Terence (Adelphoe and Andria). — Reading at sight. — Written translations	3	62 Fr., 9 Sp., 2 Sc. (Two sections)	73
Prof. Greenough and Dr. Richardson	*C.* Cicero (de Amicitia). — Livy (Books VII., VIII.). — Terence (Phormio, with selections from other plays). — The instruction was devoted to teaching the reading of Latin understandingly, with only written translations	3	6 So., 86 Fr., 13 Sp. (Four sections)	105
Prof. Allen	*D.* Livy (Book XXI. and part of XXII.). — Terence (Andria). — Cicero (de Senectute). — Plautus (Miles Gloriosus). — Short dictations on Latin pronunciation, orthography, and word-formation. — Six lectures on Latin literature	3	26 Fr.	26
Dr. Richardson	*E.* Latin Composition. — Written translation into Latin of passages from the last part of Allen and Greenough's Latin Composition. — *Viva voce* translations in connection with study of the uses of the verb	3 a fortnight	1 Se., 2 So., 34 Fr.	37
Prof. Lane	1. Tacitus (parts of the Histories and the Dialogus). — Horace (Odes)	3	1 Ju., 57 So., 1 Fr.	59
Dr. Richardson	2. *First half-year:* Careful reading of Cicero (Phillippics I.-IV., IX., XIV., and Republic, Book I., with other selections). — Study of Roman political antiquities. — Reading at sight	3	2 Se., 2 Ju., 23 So., 3 Sp.	30
	Second half-year: Careful reading of Cicero (Tusculan Disputations, Book I., with selections from Books II.-V.), and Catullus (Marriage of Peleus). — Reading at sight (Livy, Book XXVII.)	3	4 Se., 3 Ju., 23 So., 4 Sp.	34
Mr. Parker	3. Latin Composition (Second Course). — Exercises from Preble and Parker's Handbook. — Lectures and individual instruction	1	1 Se., 1 Ju., 21 So.	23

Prof. Greenough	4. Horace (Satires, and Book I. of the Epistles). — The poems were read, with a running commentary, devoted especially to the subject matter and the connection of thought	3 2d half-year	1 Gr., 5 Se., 7 Ju., 7 So., 1 Sp.	21
Mr. Parker	6. Tacitus (Annals, Books I.-VI.). — Juvenal (Satires I., III.-V., VII., VIII., X., XIV., XVI.). — Martial (Epigrams, about a thousand lines). — Instruction partly by recitation and partly by lecture. Much attention to historical and literary matter	3	4 Se., 11 Ju., 1 So.	16
Prof. Preble	7. Latin Composition (Third Course). — Translations into Latin and original compositions in Latin. — Analytical study of idioms and points of grammar, each student taking some classical prose work to investigate. One student also wrote several verse compositions in different metres	2	2 Gr., 2 Se., 3 Ju.	7
Prof. Lane	8. Plautus (selected plays). — Lucretius (selections). — Horace (parts of the Satires)	3	4 Gr., 7 Se., 2 Ju.	13
Mr. Parker	13. Fifty lectures on the causes, phenomena, and effects of Latin Literature from Naevius to Suetonius, with some notice of later times. — Occasional readings. — Some oversight of students' private reading	2 or 3	3 Gr., 1 Se.	4
Prof. Preble	*14. Studies in Latin Literature. — *First half-year:* Tibullus; Propertius (Book I.). — *Second half-year:* Catullus. — Each student wrote a brief thesis in addition to the other work	1	1 Gr., 1 Se., 1 So.	3
	[16. Philosophy among the Romans	2	Omitted in 1887–88.	
Prof. Greenough	*10. Private Life of the Romans, chiefly as illustrated by works of art	2	Omitted in 1887–88.	
Prof. Lane	*12. Latin Grammar. — Quintilian (some grammatical parts of Book I.). — Written collections of grammatical material, with oral discussions and comments	1	2 Gr., 4 Se.	6

COURSES OF INSTRUCTION. — CONTINUED.

	GREEK AND LATIN.			
Profs. Greenough and Lanman	*1. Greek and Latin Comparative Philology. — Lectures on the Comparative Philology of Greek, Latin, and Sanskrit, introduced by a short course in the elements of Sanskrit	3	3 Se.	3
Prof. Allen	*2. Practice in Text-Criticism and Interpretation. — Critical study of three hymns of Callimachus and a part of the Adelphoe of Terence. — A few exercises in Greek Inscriptions. — The exercises were conducted in Latin	3	3 Gr.	3
	ENGLISH.			
Profs. A. S. Hill and Briggs and Mr. Cummings	*A.* (Prescribed for Freshmen.) Rhetoric and English Composition. — Lectures on Rhetoric, based on A. S. Hill's Principles of Rhetoric. — Introduction to the study of English Literature (lectures, once a week, second half-year). — Weekly themes, written in the classroom and criticised by the instructors	3	3 Se., 3 Ju., 9 So., 256 Fr., 51 Sp., 3 Sc.	325
Prof. Briggs and Messrs. Clymer, Wendell, and Nutter	*B.* (Prescribed for Sophomores.) Twelve Themes. — Lectures and discussions of themes once a week		1 Se., 9 Ju., 233 So., 14 Fr., 19 Sp., 1 Law	277
Prof. Royce and Mr. Conant	*C.* (Prescribed for Juniors.) Forensics. — Ten lectures on Argumentative Composition. — A Forensic, a Thesis (in forensic form), and an examination to test the student's power of writing argumentative essays off-hand on subjects previously studied		1 Se., 179 Ju., 14 So., 1 Fr., 8 Sp.	203
Prof. Royce and Mr. Cummings	*D.* (Prescribed for Seniors.) Forensics (Second Course, conducted on the same plan as Course *C*) *a.* Theses substituted for Course *C* or *D* by candidates for Honors		1 Gr., 233 Se., 14 Ju., 1 Sp.	249

Mr. Wendell	12. English Composition. — Daily themes from Oct. 1 to May 31. — Sixteen fortnightly themes. — Weekly lectures (on Mondays) on the principles of Rhetoric; and, during the second half-year, on the specimens of English pure style in Saintsbury's selections. The Wednesday hour was devoted to individual instruction, each student thus meeting the Instructor four times in the course of the year. On alternate Fridays themes were criticised in writing by the class, each student who handed in a theme receiving one for criticism; on the remaining Fridays specimen themes were read and discussed before the class	3	35 Se., 62 Ju., 4 So., 7 Sp.	108
Prof. A. S. Hill	*5. English Composition (Advanced Course)	3	2 Gr., 13 Se., 3 Ju., 1 So., 1 Sp.	20
Profs. Taussig and Hart and Mr. Hayes	*6. Oral Discussion of Topics in Political Economy and History. — Preparation of briefs. — Arguments as principal disputants, and from the floor. — Criticism on argument, presentation, and delivery	2 one exercise	23 Se.	23
Prof. Child	3. English. — Sweet's Anglo-Saxon Reader. — Beowulf	3	2 Gr., 2 Se., 1 Ju., 2 So.	7
Prof. Child	[4. Early English. — Mätzner's Altenglische Sprachproben	3	Omitted in 1887–88.	
Prof. Child	[1. English Literature. — Chaucer	3	Omitted in 1887–88.	
Prof. Child	11. English Literature.—Bacon (Essays; Advancement of Learning, Book I.). — Milton (Areopagitica; Minor Poems; Paradise Lost, Books I., II., and selections)	3	7 Gr., 9 Se., 4 Ju., 6 So., 3 Fr., 1 Sp.	30
Prof. Child	[13. English Literature. — Spenser. — The English Bible	3	Omitted in 1887–88.	
Prof. Child	2. English Literature. — Shakspere (Hamlet; Othello; Henry V.; Winter's Tale; Romeo and Juliet; Antony and Cleopatra). — Dowden's Shakspere Primer	3	7 Gr., 24 Se., 21 Ju., 11 So., 1 Fr., 1 Sc.	65
Mr. Wendell	14. English Literature. — The Drama (exclusive of Shakspere) from the Miracle Plays to the Restoration. — Lectures on the development of the English drama and on the following dramatists: Marlowe, Ben Jonson, Middleton, Dekker, Beaumont and Fletcher, Massinger, Webster, Ford, and Congreve. — Two theses by each student	1	3 Gr., 24 Se., 7 Ju., 4 So., 1 Fr., 2 Sp.	41

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Briggs	15. English Literature (exclusive of Milton) from Shakspere to Dryden (Donne, Hall, Marston, Ben Jonson, Drummond, Wm. Browne, Carew, Herrick, Suckling, Lovelace, George Herbert, Crashaw, Vaughan, Cowley, Waller, Butler, Izaak Walton, Sir Thomas Browne, Fuller, Jeremy Taylor, Bunyan). — Lectures. — Essays by the students	2 2d half-year	2 Gr., 28 Se., 19 Ju., 22 So., 3 Fr., 7 Sp.	81
Prof. A. S. Hill	[7. English Literature of the Eighteenth Century	1 1st half-year	Omitted in 1887–88.	
Prof. A. S. Hill	8. English Literature. — Poets of the Nineteenth Century	2 1st half-year	4 Gr., 9 Se., 8 Ju., 14 So., 1 Fr., 3 Sp., 1 Di., 1 Sc.	41
Prof. A. S. Hill	[9. English Literature. — Prose writers of the Nineteenth Century	2 1st half-year	Omitted in 1887–88.	
	*10. English Literature. — Study of special topics :			
Prof. Child	(*a*) Bacon's Life and Writings (half-course)	3	1 Ju.	1
Prof. A. S. Hill	(*b*) Burke and his Times. — Theses	1	2 Se.	2
Mr. Wendell	(*c*) Gibbon, with thesis on the position of Gibbon in English literature (full course)		1 Se.	1
Mr. Wendell	(*d*) Walt Whitman (half-course)		1 Se.	1
	GERMAN.			
Prof. Bartlett and Messrs. Grandgent and Hochdörfer	*A*. (Prescribed for Freshmen who did not present German for admission.) Sheldon's Grammar. — Translation of German stories (six of Grimm's Märchen and Der zerbrochene Krug), with practice in translating English into German (twice a week, in five sections). — Translation of easy stories to the class (once a week) : Der Schimmel, Der Neffe als Onkel, Germelshausen, Er muss tanzen, and Auf Wiedersehen	3	6 Sen., 2 Ju., 12 So., 185 Fr., 33 Sp., 1 Law, 2 Sc. (Six sections)	241

Pro Francke and Messrs. Marcou and Babbitt	1. Modern Plays, Novels, and Lyrics. — Goethe (Hermann und Dorothea). — Chamisso (Peter Schlemihl). — Kleist (Prinz von Homburg). — Heine (Reisebilder). — Heyse (Im Paradiese). — Buchheim's Deutsche Lyrik. — Otto's Materials for translating English into German, Part I.	3	1 Gr., 1 Se., 4 Ju., 75 So., 22 Fr., 11 Sp., 4 Sc. (Two sections)	118
Prof. Bartlett	2. German Prose. — Subjects in History and Literature. — Translation and reading at sight. — Composition. — Der Neue Plutarch (Vols. 10 and 11: lives of Frederick the Great and Napoleon III.). — Meissner's Pictures of German Life. — Der deutsche Novellenschatz (Vol. 11.)	3	2 Gr., 1 Se., 2 Ju., 23 So., 14 Fr., 2 Sp., 1 Law	45
Prof. Bartlett	3. German Literature of the Eighteenth Century (First Course: Lessing and Schiller). — Lives of Lessing and Schiller. — Lessing (Minna v. Barnhelm and Emilia Galotti). — Schiller (Wilhelm Tell; Der Neffe als Onkel; Maria Stuart; Die Braut von Messina; Wallenstein). — German Lyrics and Ballads. — Heyse (Die Brüder). — Practice in reading at sight and in writing German	3	2 Gr., 4 Se., 26 Ju., 15 So., 11 Fr., 5 Sp.	63
Prof. Francke	4. History of German Literature from the Reformation to the Nineteenth Century. — Lectures and collateral reading. — One thesis	2	5 Se., 7 Ju., 3 So., 1 Sp., 1 Law, 1 Di.	18
Prof. Francke	5. German Literature of the Eighteenth Century (Second Course: Goethe). — Study of Goethe's life and work. — Recitations and lectures. — Four theses	3	2 Gr., 7 Se., 8 Jr., 9 So., 5 Fr., 2 Sp.	33
Prof. Francke	[*6. History of German Literature and Art in the Middle Ages	2	Omitted in 1887–88.	
Prof. Sheldon	7. Das Nibelungenlied. — Hartmann von Aue (Der arme Heinrich). — Translation from mediaeval German into modern German. — Additional selections assigned to each student to be read privately. — One thesis	1 or 2	1 Se., 1 Di.	2

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Bartlett	*9. Practice in writing and speaking German (Elementary Course). — German Prose, Lyrics, and Ballads. — Der deutsche Novellenschatz (Vols. 11 and 21). — Selections from the German poets	2	3 Ju., 4 So., 1 Fr., 2 Sp.	10
	[*10. Practice in writing German (Second Course). — Subjects in History and Literature	2	Omitted in 1887–88.	
	Here for convenience is placed			
Prof. Sheldon	[8. Gothic	1 or 2	Omitted in 1887–88.	
	FRENCH.			
Mr. Sanderson	*A.* (Prescribed for Freshmen who did not present French for admission.) Chardenal's First French Course. — Bôcher's Reader. — Ludovic Halévy (l'Abbé Constantin). — Erckmann-Chatrian (Madame Thérèse). — George Sand (la Mare au Diable). — Labiche (la Poudre aux yeux). — Edmond About (le Buste)	3	1 Gr., 1 Se., 2 So., 24 Fr., 25 Sp., 1 Law (Two sections)	54
Prof. Cohn and Mr. Sanderson	1. Sandeau (Mademoiselle de la Seiglière). — Augier et Sandeau (le Gendre de M. Poirier). — Gennevraye (l'Ombra). — Dumas (la Tulipe Noire). — George Sand (Marianne). — Stahl (Maroussia). — About (la Mère de la Marquise). — Corneille (le Cid). — Racine (Britannicus). — Molière (l'Avare). — La Fontaine (Fables, Book I.). — Roulier's second book of French Composition (to page 150). — Eight fables of La Fontaine were committed to memory. Each student read outside of the class, and presented a report upon, one 12°. volume chosen by himself with the approval of the Instructor. Three lectures in French were given to the class. The course was conducted almost entirely in French	3	3 Se., 5 Ju., 33 So., 81 Fr., 16 Sp. 1 Law, 6 Sc. (Four sections)	145

Profs. Böcher and Cohn and Mr. Sanderson	2. La Fontaine (Fables; the third Book was committed to memory). — Taine (La Fontaine et ses fables). — Beaumarchais (le Barbier de Séville). — Bernardin (Morceaux choisis du XVIII^{e} siècle). — Balzac (Eugénie Grandet). — Molière (le Bourgeois Gentilhomme). — Racine (Bérénice). — Corneille (Cinna). — Sainte-Beuve (Causeries). — French Memoirs (Masson's French Classics, Vol. VII.). — In addition to these works the students were expected to read a short history of France, such as *Duruy* (from Chapter XVII. to the end). — Six lectures were given on historical grammar. — Three written exercises were due every month, consisting of a résumé or an analysis of a play, tragedy, fable, etc.	3	1 Se., 7 Ju., 24 So., 20 Fr., 7 Sp.	59
Profs. Böcher and Cohn	3. Adolphe Régnier's Théâtre classique (4 plays by Corneille, 3 by Racine, 1 by Molière, 1 by Voltaire). — Molière (les Précieuses Ridicules; les Femmes Savantes; le Médecin malgré lui; Tartufe). — Bossuet (Oraison funèbre de Henriette de France). — Voltaire (Lettres choisies). — J. J. Rousseau (Morceaux choisis). — Montesquieu (Considérations sur les causes de la grandeur des Romains et de leur décadence). — Victor Hugo (Quatre-vingt-treize). — Daudet (Contes choisis). — Pailleron (le Monde où l'on s'ennuie). — Thirty lectures on the history of French Literature. — Eight short and two long themes were written	3	1 Gr., 4 Se., 11 Ju., 24 So., 20 Fr., 6 Sp.	66
Prof. Cohn	4. Littérature française au XVIII^{e} siècle. — Jules Barni's Histoire des idées morales et politiques en France au XVIII^{e} siècle. — Voltaire (Zaïre; Brutus; Zadig; Essai sur les mœurs). — Montesquieu (Lettres Persanes; Esprit des Lois). — J. J. Rousseau (Discours sur les Lettres et les Arts; Lettre sur les Spectacles; Emile). — Diderot (Œuvres choisies). — D'Alembert (Discours préliminaire de l'Encyclopédie). — Marivaux (two comedies selected by each student for himself). — Le Sage (Turcaret). — Beaumarchais (Mémoires; le Mariage de Figaro). — Mirabeau (Discours choisis). — Three long themes were written	3	2 Gr., 3 Se., 6 Ju., 9 So., 1 Sp.	21

COURSES OF INSTRUCTION.—CONTINUED.

Prof. Bôcher	5. Littérature française au XV^e et au XVI^e siècles.—La Renaissance en France.—Selections from Froissart and Commines.—Montaigne, Essais.—Darmesteter et Hatzfeld: Le Seizième siècle en France.—Thirty lectures were given and three themes written	2	1 Gr., 7 Se., 1 Ju., 1 Fr.	10
Prof. Cohn	[6. Littérature française jusqu'à l'avènement des Valois	2	Omitted in 1887–88.	
Prof. Bôcher	[8. Translation and reading at sight.—Historical Prose.—Modern Novels and Prose	1	Omitted in 1887–88.	
Mr. Grandgent	9. Practice in writing and speaking French (Elementary Course).—Rougemont's La France.—Worman and Rougemont's French Grammar.—Blouët's Class-Book of French Composition (fifty exercises).—Conversational exercises	2	3 Se., 1 Ju., 9 So., 15 Fr., 4 Sp.	32
Mr. Sanderson	10. Practice in writing and speaking French (Intermediate Course).—Chassang's Grammaire française (Cours moyen).—Jules Bué's Short Stories from modern French authors.—Maurice Block (La France).—Written exercises once a week.—Debates	2	3 Se., 13 Ju., 11 So., 6 Fr. (Two sections)	33
Prof. Cohn	11. Practice in writing and speaking French (Advanced Course).—Chassang's Grammaire française (Cours supérieur).—Maréchal's Histoire contemporaine de l'Europe depuis 1789 was read, and its chapters were used as the subject of over sixty conversations.—Twenty-five themes	2	2 Gr., 1 Se., 4 Ju., 3 So., 3 Fr.	13
	Courses 2, 3, 4, 5, 6, 9, 10, and 11 are conducted entirely in French			
	ITALIAN.			
Prof. Sheldon	1. Grandgent's Grammar.—Salvatore Farina (Fante di Picche).—Manzoni (about three fourths of I Promessi Sposi).—Translation of easy English into Italian	3	1 Gr., 8 Se., 6 Ju., 15 So., 10 Fr., 2 Sp.	42

Prof. Sheldon	2. Gherardi del Testa (six plays). — Tasso (most of the Gerusalemme Liberata). — Ariosto (about two thirds of the Orlando Furioso). — Practice in writing Italian	3	3 Se., 1 Ju., 1 Fr.	5
Prof. Nash	*3. Selections from Boccaccio (Decamerone), Petrarca (Le Rime), and Dante (Divina Commedia), often read at sight, and often without translating. — Some account was given, by lectures and by outside reading, of the literary history of certain periods. — Prose Composition. — Pronunciation	3	1 Gr., 1 Ju.	2

SPANISH.

Prof. Nash	1. Del Mar's Grammar, with lectures. — Gil Blas (selections). — El Eco de Madrid (selections). — Composition (once a week). — Reading at sight. — Pronunciation	3	6 Se., 11 Ju., 10 So., 3 Fr., 2 Law	32
Prof. Nash	2. Modern Literature. — Four modern novels. — Two modern plays. — Reading at sight. — Syntax and composition. — Pronunciation	3	6 Se., 3 Ju.	9
Prof. Nash	*3. Selections from Calderon (two plays), Lope de Vega (one play), Cervantes (both parts of the Don Quijote), and the Poema del Cid. — One modern novel, read chiefly at sight and without translating. — Lectures on the History of Spanish Literature, and on special literary topics. — Reading at sight. — Composition and conversation	3	1 Se., 1 Ju.	2

ROMANCE PHILOLOGY.

Prof. Sheldon	1. Introductory Course. — Comparative Phonology and Inflexions of the chief Romance languages	2 1st half-year	1 Gr., 1 Se., 1 Law	3
Prof. Sheldon	2. Phonetics, with special reference to the explanation of sound-changes in the Romance languages. — Sievers's Grundzüge der Phonetik. — Sweet's Handbook of Phonetics. — Lectures. — One thesis	2 2d half-year	1 Gr.	1

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Sheldon	3. Old French. — Phonology and Inflexions. — Lectures, based chiefly on Diez's Grammatik der romanischen Sprachen and Grober's Grundriss der romanischen Philologie. — G. Paris (Extraits de la Chanson de Roland et de la Vie de St. Louis; La Vie de St. Alexis). — Additional private reading	2	1 Gr.	1
Mr. Grandgent	4. Provençal. — The place of Provençal among the Romance Languages. — Provençal Literature. — Versification. — The Vulgar Latin. — The Phonetic Laws governing the development of Provençal. — Explanation of Provençal Inflexions	2 2d half-year.	1 Gr., 2 Se., 1 Fr.	4
Mr. Grandgent	[5. Historical Italian Grammar	2 half the year.	Omitted in 1887–88.	
Prof. Sheldon	[6. Old French Dialects, with special reference to Anglo Norman	2	Omitted in 1887–88.	
	PHILOSOPHY.			
	INTRODUCTORY COURSES.			
Prof. Palmer	1. History of Philosophy. — A survey in outline of ancient and modern speculative thought. — Ferrier's Lectures on Greek Philosophy. — Bax's Handbook. — Lectures	3	22 Se., 30 Ju., 12 So., 3 Sp., 3 Di.	70
Prof. James	2. Logic and Psychology. — Bain's Senses and Intellect. — Jevons's Lessons in Elementary Logic. — Lectures and recitations	3	25 Se., 43 Ju., 44 So., 1 Fr., 10 Sp.	123
Prof. Royce	3. Logic and Psychology. — Lectures on Logic. — Ladd's Physiological Psychology	3 1st half-year.	3 Se., 4 Ju., 12 So., 2 Fr., 4 Sp., 1 Di.	26
	ADVANCED COURSES.			
Prof. Palmer	4. Ethics. — Earlier English Ethics. — Mill's Utilitarianism. — Kant's Theory of Ethics. — Lectures and theses	3	2 Gr., 31 Se., 18 Ju., 4 Sp., 2 Di.	57

Prof. James	5. English Philosophy. — Study of Berkeley's Principles of Human Knowledge and Theory of Vision. — Hume's Inquiry concerning Human Understanding. — Reid's Intellectual Powers. — Lectures. — Theses	3	11 Se., 2 Ju., 3 Sp.	16
Prof. Bowen	6. Earlier French Philosophy, from Descartes to Leibnitz, and German Philosophy from Kant to Hegel	3	1 Gr., 9 Se., 3 Ju., 2 Law, 1 Di., 1 Med.	17
Prof. Bowen	[7. German Philosophy of the Present Day. — Hartmann's Philosophie des Unbewussten. — Schopenhauer's Die Welt als Wille und Vorstellung	3	Omitted in 1887–88.	
Prof. Royce and Dr. Abbot	13. Monism and the Theory of Evolution in their relation to the Philosophy of Nature. — Spinoza's Ethics. — Spencer's First Principles. — Abbot's Scientific Theism. — Lectures, discussions, and theses	3	3 Gr., 26 Se., 4 Ju., 1 Sp., 1 Di.	35
Prof. Peabody	11. The Ethics of Social Reform. — A study of the principles of Social Reform and of the questions of Charity, Marriage and Divorce, the Indians, Labor, and Temperance, in particular. — Lectures and theses. Visits were made to institutions of charity and reform	2	4 Gr., 53 Se., 25 Ju., 3 So., 7 Sp., 8 Di., 1 Sc.	101
Prof. Peabody	[*10. The Philosophy of Religion. — Lectures and essays	1	Omitted in 1887–88.	
	Courses for Special Research.			
Prof. James	*9. Questions in Psychology. — Lectures and special reading	2	1 Gr.	1
Prof. Royce	*12. Special advanced instruction in Metaphysics. — Kant's Critique of Pure Reason. — Theses. — Library research. — Lectures	1st half-year	1 Gr., 1 Se.	2
Prof. Palmer	*8. Questions in Ethics		Omitted in 1887–88.	

COURSES OF INSTRUCTION. — CONTINUED.

	POLITICAL ECONOMY.			
Profs. Laughlin and Taussig	1. *First half-year:* Mill's Principles of Political Economy. — Lectures on Banking	3	2 Gr., 29 Se., 83 Ju., 69 So., 5 Fr., 21 Sp., 1 Law (Four sections)	210
Mr. Gray	*Second half-year:* Division *A.* Mill's Principles. — Cairnes's Leading Principles. — Bagehot's Postulates of Political Economy. — Lectures on Financial Legislation	3	4 Se., 33 Ju., 44 So., 1 Fr., 8 Sp. (Two sections)	90
Prof. Taussig	Division *B.* Mill's Principles (selections). — Jevons's The State in Relation to Labor. — Taussig's Present Tariff. — Hadley's Railroad Transportation. — Lectures on Social Questions and on Financial Legislation	3	2 Gr., 25 Se., 49 Ju., 25 So., 4 Fr., 11 Sp., 1 Law (Two sections)	117
Prof. Taussig	*2. History of Economic Theory. — Distribution. — The Scope and Method of Political Economy. — Socialism. — Lectures, preparation of theses, and discussion of selections from leading writers	3	4 Gr., 14 Se., 8 Ju., 1 So., 2 Sp.	29
Prof. Laughlin	*3. Investigation and Discussion of Practical Economic Questions. — Short theses	3 1st half-year	1 Gr., 12 Se., 8 Ju., 1 So., 1 Sp.	23
Prof. Dunbar	4. Economic History of Europe and America since the Seven Years' War. — Selections for required reading. — Lectures	3	3 Gr., 38 Se., 29 Ju., 25 So., 6 Sp., 1 Sc.	102
Prof. Laughlin	[*5. Economic Effects of Land Tenures in England, Ireland, France, and Germany	1	Omitted in 1887–88.	
Prof. Taussig	*6. History of Tariff Legislation in the United States. — Lectures, required reading, and investigation of special topics	2 2d half-year	5 Gr., 31 Se., 17 Jr., 3 Sp., 2 Law	58
Prof. Dunbar	*7. Taxation, Public Debts, and Banking. — Lectures	3	1 Gr., 11 Se., 3 Ju.	15
Prof. Dunbar	*8. Financial history of the United States. — Lectures	2 1st half-year	3 Gr., 26 Se., 8 Ju., 2 Sp.	39
Prof. Laughlin	*9. Management and Ownership of Railways	2 or 3 1st hf.yr	1 Gr., 14 Se., 3 Ju., 1 Sp.	19

	*10. Special Advanced Study and Research:			
Prof. Taussig	(*a*) The rise of manufacturing industry and its social effects		1 Gr.	1
Prof. Taussig	(*b*) The present stage of the wages-fund theory		1 Se.	1
Prof. Laughlin	(*c*) Investigation of railroad problems	1st half-year	3 Se.	3
Prof. Dunbar	(*d*) Special investigation. — Banking under State laws in the United States. — Financial Administration of Paris		2 Se.	2

HISTORY.

Profs. Macvane and Channing	1. Mediaeval and Modern History, chiefly of England, France, and Germany (Introductory Course)	3	1 Se., 1 Ju., 45 So., 106 Fr., 35 Sp.	188
Prof. Macvane	2. Constitutional Government (Elementary Course)	3 1st half-year	4 Se., 17 Ju., 90 So., 57 Fr., 35 Sp., 2 Law, 2 Se.	207
	[3. Roman History to the Fall of the Republic, with especial reference to the development of Political Institutions in Greece and Rome		Omitted in 1887–88.	
	4. Political and Legal Institutions of the Roman Empire. — Development of the Frankish Constitution to the death of Charlemagne	2 or 3	Omitted in 1887–88.	
Prof. Emerton	5. The Conflict of Christianity with Paganism. — Origin and development of the Roman Primacy to its alliance with the Holy Roman Empire, A.D. 800	2	1 Gr., 4 Se., 3 Ju., 5 So., 3 Sp.	16
Prof. Emerton	6. The Mediaeval Church, with especial reference to its effect upon public life and upon intellectual and social progress	2	3 Gr., 8 Se., 3 Ju., 4 Sp.	18
Prof. Young and Dr. Snow	8. History of Government and Administration in France from the Frankish period to modern times	3	1 Gr., 5 Se., 2 Ju., 1 So.	9
Profs. Young and Macvane	9. Legal and Constitutional History of England to the Sixteenth Century	3	4 Gr., 12 Se., 9 Ju., 5 So., 2 Fr., 2 Sp.	34

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Emerton	[10. The Era of the Reformation in Europe, from the rise of Italian Humanism to the close of the Council of Trent	3	Omitted in 1887–88.	
Prof. Young	[11. European History during the Seventeenth Century and the first half of the Eighteenth	3	Omitted in 1887–88.	
Profs. Macvane and Channing	12. European History since 1750	3	5 Gr., 23 Se., 51 Ju., 31 So., 3 Fr., 8 Sp., 1 Sc.	122
Prof. Channing	18. American History to the close of the Revolutionary war. — Lectures and collateral reading. — Studies of original material	3	2 Gr., 8 Se., 25 Ju., 9 So., 4 Fr., 3 Sp.	51
Prof. Hart	13. Constitutional and Political History of the United States (1783–1861). — Lectures and collateral reading. — Seven special reports, each necessitating from six to twelve hours' work in the Library, were required of each student, under the direction of an assistant	3	4 Gr., 38 Se., 44 Ju., 6 So., 1 Fr., 8 Sp.	101
Prof. Hart	17. General History of the United States. — Lectures, with collateral reading. — Four special reports, each necessitating from six to ten hours' work in the Library, were required of each student, under the direction of an assistant	3 2d half-year	9 Se., 5 Ju., 24 So., 7 Fr., 13 Sp., 1 Di., 2 Sc.	61
Profs. Macvane and Hart	*14. Constitutional Government (Advanced Course)	3	4 Gr., 10 Se.	14
Dr. Snow	*15. Elements of Public International Law. — History of Treaties	3	1 Gr., 32 Se., 4 Ju., 2 Sp., 1 Law.	40
Prof. Everett	*16. Studies in the Comparative History of Religions, particularly the Vedic religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese religions. — Lectures and collateral reading	2	3 Se., 4 Sp., 6 Di.	13
	*20. Special Advanced Study and Research:			
Prof. Emerton	(*a*) Topics in Mediæval and Church History		4 Gr.	4

Prof. Macvane	(*c*) Topics in Constitutional Government		2 Gr.	2
Prof. Hart	(*d*) Topics in the Political and Constitutional History of the United States since 1861. — Introductory lectures on methods. — Lectures by the students before the class; preparation of a thesis by each student; lectures, by four students, before the class in Course 13; bibliographical exercises	2	2 Gr., 8 Se.	10
Prof. Channing	(*e*) Social and Economic Condition of the English North American Colonies in 1775. — Monthly reports of work done and the presentation of final results in a thesis	2	5 Se., 2 Ju.	7
	ROMAN LAW.			
Prof. Young and Mr. Schofield	1. History and Institutes of Roman Law. — Institutes of Gaius and Justinian, omitting the Law of Inheritance	3	2 Gr., 11 Se., 10 Ju., 1 So.	24
Prof. Young	[2. Advanced study of special topics. — Selections from the Digest	half-course	Omitted in 1887–88.	
	[3. The Law of Inheritance	2d half-year	Omitted in 1887–88.	
	FINE ARTS.			
Mr. Moore	1. Principles of Delineation, Color, and Chiaroscuro. — Lectures (once a week), with collateral reading, in Ruskin's Modern Painters, Vols. I., III., and IV., Hamerton's Painters' Camp in the Highlands, Sir Joshua Reynolds' Discourses, Pointer's Lectures on Art, Rood's Modern Chromatics, Pyne's Perspective. — Practice in Drawing and in the use of Water-colors (six hours a week) — Perspective		13 Se., 3 Ju., 15 So., 3 Fr., 2 Sp.	36
Mr. Moore	2. Principles of Design in Painting, Sculpture, and Architecture. — Lectures (once a week), with collateral reading in Ruskin's Ariadne Florentina and Seven Lamps of Architecture, Viollet-le-Duc's Dictionnaire de L'Architecture française, Ruskin's Modern Painters, Vol. V. — Practice in Drawing and Water-color (three hours a week)		2 Se., 3 Ju.	5

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Norton	[3. Ancient Art	2	Omitted in 1887–88.	
Prof. Norton	4. Roman and Mediaeval Art	3	8 Gr., 98 Se., 51 Ju., 34 So., 14 Fr., 14 Sp., 1 Sc.	220
Prof. Norton	*8. Literature of the Fine Arts in Italy during the Middle Ages, with special study of Dante	3	5 Gr., 9 Se.	14
Dr. Fowler	6. Greek Archaeology. — Progress of archaeological discovery and of the knowledge of Greek art from the fifteenth century to the present time. Each student selected a topic from a list prepared by the instructor, and delivered a lecture upon it	3	9 Se., 2 Ju., 1 So.	12
	MUSIC.			
Prof. Paine	1. Harmony. — Richter's Harmony, with illustrations and explanations. — Written exercises on figured basses and given melodies. — Chorals and national airs harmonized. — Exercises in Strict Counterpoint, in 2, 3, and 4 voices, were introduced during the latter part of the year	3	1 Se., 5 Ju., 2 Fr., 2 Sp.	10
Prof. Paine	2. Counterpoint. — Richter's Counterpoint. — Written exercises on given themes, in the following order: Chorals and other melodies harmonized, using passing notes; different orders of Counterpoint in 2, 3, and 4 voices; Double Counterpoint; Free Imitative Counterpoint; introduction to Canon and Fugue. Organ preludes and songs were also composed	3	2 Se., 2 Ju.	4
Prof. Paine	3. History of Music. — Lectures, with collateral reading. — Ritter's Student's History of Music	3	2 Gr., 14 Se., 5 Ju., 7 So., 7 Fr., 2 Sp.	37
Prof. Paine	[*5. Canon and Fugue	2	Omitted in 1887–88.	
Prof. Paine	*6. Free Thematic Music. — Bussler's and Pauer's text-books on Musical Form. — Symphonies and Sonatas of Beethoven, Mozart, and other masters were analyzed. Various forms of free instrumental music were composed, including a piano sonata. Two, three, and four-part Fugues and Canons were composed	2	2 Gr., 2 Ju.	4

MATHEMATICS.

Prof. C. J. White	*A.* Logarithms. — Plane Trigonometry, and its applications to Surveying and Navigation	3 1st half-year	2 Ju., 8 So., 86 Fr., 15 Sp., 2 Sc. (Two sections)	113
Prof. C. J. White	*B.* Analytic Geometry (Elementary Course)	3 2d half-year	1 Ju., 5 So., 50 Fr., 4 Sp. (Two sections)	60
Prof J. M. Peirce	*C.* Plane Analytic Geometry (Extended Course). — *First half-year:* Elementary study of the Right Line, Circle, and Conic Sections. — *Second half-year:* Oblique Coördinates; Determinants; the Pair of Right Lines; General Equations of the First and Second Degrees; General Principles of Algebraic Loci	3	1 Se., 6 So., 17 Fr., 2 Sp., 3 Sc.	29
Mr. Sawin	*D.* Algebra. — Wentworth's College Algebra (Chapters 9–18, 21, 22, omitting the starred sections and sections 250–260)	3 1st half-year	14 Se., 10 Ju., 10 So., 20 Fr., 12 Sp. (Two sections)	66
Mr. Sawin	*G.* Algebra (Extended Course). — Wentworth's College Algebra (Chapters 10–18, 21, 22, 29)	3 1st half-year	1 Se., 1 Ju., 7 So., 12 Fr., 2 Sp.	23
Mr. Sawin	*E.* Solid Geometry. — Chauvenet's Geometry (the last four books of the revised edition)	3 2d half-year	10 Se., 9 Ju., 20 So., 41 Fr., 19 Sp., 1 Sc. (Three sections)	100
Mr. Sawin	*F.* Elementary Mechanics. — Goodwin's Elementary Statics	3 2d half-year	2 Ju., 9 So., 16 Fr., 2 Sp.	29
Prof. C. J. White	1. Practical applications of Trigonometry. — Spherical Trigonometry, and its application to Astronomy and Navigation	2	2 Se., 4 Ju., 3 So., 6 Fr., 1 Sc.	16
Prof. B. O. Peirce	2. Differential and Integral Calculus (First Course)	3	2 Gr., 3 Se., 6 Ju., 23 So., 2 Sp.	36
Prof. Byerly	3. Modern Methods in Analytic Geometry. — Introduction to the Theory of Higher Plane Curves. — Lectures. — Salmon's Conic Sections. — Salmon's Higher Plane Curves	3	3 Gr., 4 So.	7

COURSES OF INSTRUCTION. — CONTINUED.

Mr. Sawin	4. The Elements of Mechanics. — Bowser's Analytic Mechanics; lectures and problems. — Fundamental principles and methods of Graphical Statics	3	1 Gr., 2 Se., 3 Ju., 2 So., 1 Sp.	9
Prof. Byerly	5. Differential and Integral Calculus (Second Course). — Lectures and Problems; Byerly's Differential Calculus; Byerly's Integral Calculus	3	3 Se., 3 Ju.	6
Prof. J. M. Peirce	6. Quaternions and Theoretical Mechanics. — *First half-year:* Elementary principles of Quaternions, and Geometry of the Plane, Right Line, Sphere, and Circle. — *Second half-year:* Linear Vector Function; Theory of Quadrics; Theory of Tortuous Curves; Elements of Dynamics; Moments of Inertia; Euler's Equations for Rotation	3	4 Gr., 2 Se., 1 Ju.	7
Prof. C. J. White	[12. Descriptive and Spherical Astronomy	3	Omitted in 1887–88.	
Prof. J. M. Peirce	7. Higher Plane Curves. — General theory, with the special study of Cubics	2	3 Gr.	3
Prof. Byerly	[8. Analytic Mechanics	3	Omitted in 1887-88.	
Prof. J. M. Peirce	[9. Quaternions and Theoretical Mechanics (Second Course)	3	Omitted in 1887–88.	
Prof. Byerly	10. The Theory of the solution, in terms of Arbitrary Functions, of the Homogeneous Partial Differential Equations which occur in problems in Mathematical Physics, with applications to Conduction of Heat, Sound, and Attraction. — Lectures	2	3 Gr.	3
Prof. B. O. Peirce	11. The Mathematical Theory of Hydrostatics and Hydrokinematics	2	5 Gr., 1 Se.	6
Dr. Cole	[13. The Theory of Functions	3	Omitted in 1887–88.	
	20. Special Advanced Study and Research:			
Prof. J. M. Peirce	(*a*) Multiple Algebra		Omitted in 1887–88.	
Prof. Byerly	(*b*) Bessel's and Lamé's Functions and their use in problems in Physics. — Lectures by students. — Theses		2 Gr., 1 Se.	3
Dr. Cole	(*c*) The Higher Theory of Functions		Omitted in 1887–88.	

PHYSICS.

Prof. Lovering	*A.* (Prescribed for Freshmen.) Lectures on Electricity, Magnetism, Electro-Magnetism, and Magneto-Electricity, amply illustrated by experiments	1 2d half-year	6 Se., 5 So., 258 Fr., 40 Sp., 2 Sc.	311
Dr. Hall	*B.* Experimental Physics (Elementary Course). — Lectures (once a week) and laboratory work (two hours a week)		8 Se., 5 Ju., 11 So., 19 Fr., 17 Sp., 3 Sc.	63
Dr. Whiting	*C.* Experimental Physics. — Measurement in Mechanics, Sound, Heat, Light, Electricity, and Magnetism. — Lectures (twice a week) and laboratory exercises (four hours a week)		2 Se., 3 Ju., 10 So., 13 Fr., 4 Sc.	32
Dr. Hall	1. Principles and Methods of Physical Measurement. — Lectures (once a week) and laboratory work (two hours a week). — *First half-year:* Coefficients of expansion; maximum pressure of aqueous vapor at various temperatures; heat of combustion. — Tait's book on Heat (selections). — *Second half-year:* Interference of light; index of refraction; measurements of wave-length of sodium light. — Glazebrook's Physical Optics		1 So., 1 Fr,, 1 Sc.	3
Dr. Whiting	2. Principles and Methods of Physical Measurement (Sound, Electricity, and Magnetism). — Lectures (once a week) and laboratory exercises (two hours a week)		1 So., 1 Fr., 1 Sc.	3
Prof. Trowbridge	3. The Conservation of Energy	3	Omitted in 1887–88.	
Prof. Lovering	4. The Undulatory Theory of Light	3	Omitted in 1887–88.	
Prof. Trowbridge	5. The Spectroscope and its applications	3	1 Gr., 2 Se.	3
Prof. Trowbridge	*6. Experimental Physics (Advanced Course), with laboratory work	3	1 Se., 1 Ju., 1 So.	3
Prof. Trowbridge	*7. Mathematical Physics. — Maxwell's Electricity and Magnetism	3	1 Gr.	1
Prof. B. O. Peirce	9. Electrostatics and Electrokinematics. — Lectures (once a week) and laboratory work (six hours a week)		2 Se.	2
Dr. Hall	11. The Method of Least Squares	1½	Omitted in 1887–88.	
Dr. Hall	[12. The Kinetic Theory of Gases	1½	Omitted in 1887–88.	

COURSES OF INSTRUCTION. — CONTINUED.

	CHEMISTRY.			
Prof. Cooke	*A.* (Prescribed for Freshmen.) Elementary Chemistry (fourteen lectures)	1 1st half-year	3 Se., 6 So., 256 Fr., 40 Sp., 2 Sc.	307
Prof. Cooke and Dr. Huntington	*B.* Experimental Chemistry (Elementary Course, designed to supplement Course *A*). — Lectures (once a week) and laboratory work (two hours a week)		3 Se., 1 Ju., 10 So., 46 Fr., 17 Sp.	77
Dr. Huntington	*C.* Elementary Lithology. — Study of the minerals occurring in the ordinary rocks, with use of the polarizing microscope in distinguishing rock constituents. — Lectures (twice a week) and laboratory work		1 Gr., 1 Se., 5 Ju., 2 So., 3 Fr.	12
Prof. Jackson	1. General Descriptive Chemistry, including its applications in the arts, and embracing the scheme of the chemical elements. — Lectures (twice a week). — Laboratory work (four hours a week), or recitations (once a week) and laboratory work (two hours)		9 Se., 15 Ju., 32 So., 6 Fr., 7 Sp., 2 Sc. (Two sections)	71
Dr. Huntington	2. Descriptive and determinative Mineralogy, including crystallography and blow-pipe analysis. — Lectures (three times a week), with frequent practical exercises on the determination of mineral specimens		1 Gr., 18 Se., 13 Ju., 6 So., 13 Fr., 8 Sp., 4 Sc.	58
Prof. Hill & Mr. L. L. Jackson	3. Qualitative Analysis. — Laboratory work, with twenty lectures		1 Gr., 5 Se., 11 Ju., 9 So., 5 Fr., 4 Sp., 4 Sc.	39
Profs. Cooke and H. B. Hill	4. Gravimetric and volumetric Quantitative Analysis. — Laboratory work (nine hours a week)		3 Se., 6 Ju., 3 So., 1 Sp., 4 Sc.	17
Profs. Cooke and H. B. Hill	4*a*. Advanced Quantitative Analysis. — Laboratory work (nine hours a week)		3 Se., 3 Ju.	6
Prof. H. B. Hill	5. The Carbon Compounds. — Lectures (three times a week). — Laboratory work		1 Gr., 5 Se., 3 Ju.	9

Prof. Cooke	*6. Problems in Inorganic Chemistry, consisting chiefly of laboratory work (twelve or more hours a week) in determining gas and vapor densities, specific refractive power, and the heat evolved in chemical reactions. The students met the Instructor regularly three times a week for the discussion of their work		2 Se.	2
Prof. Cooke	*7. Crystallography and the Physics of Crystals. — Lectures (three times a week) and practical exercises:			
	First half-year: Mathematical Crystallography, with the measurement and drawing of crystals		1 Se., 1 Ju.	2
	Second half-year: Optical Crystallography		1 Gr., 3 Se., 1 Ju., 2 Sc.	7
	*10. Special Advanced Study and Research:			
Prof. Cooke	(*a*) Determination of Atomic Weights. — The whole time of the student was devoted to the subject, and his important results have been embodied in a thesis		1 Gr.	1
Prof. Jackson	(*b*) Aromatic Compounds. — Laboratory work (about thirty hours a week)		1 Gr.	1
Prof. H. B. Hill	(*c*) Organic Chemistry. — Constant daily work in the laboratory		1 Gr., 2 Se.	3
	NATURAL HISTORY.			
	BIOLOGY.			
Prof. Mark	2. Zoölogy. — Lectures (twice a week), giving a general survey of the animal kingdom, with an outline of human physiology, and treating of certain general questions. — Laboratory work (four hours a week)	1st half-year	4 Se., 9 Ju., 15 So., 12 Fr., 6 Sp., 1 Di., 2 Sc.	49
Prof. Goodale	3. Botany. — Lectures (once or twice a week) on Vegetable Morphology and Physiology, supplemented by laboratory practice (one to three hours a week) in plant dissection and analysis	2d half-year	1 Gr., 11 Se., 20 Ju., 39 So., 36 Fr., 15 Sp., 1 Di., 4 Sc.	127

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Farlow	5. Biology. — *First half-year:* Types of Plants. — Lectures (once a week) and laboratory work (six hours a week)		7 Se., 6 Ju., 9 So., 5 Sp., 2 Sc.	29
Dr. Ayers	*Second half-year:* Types of Animals (the principal invertebrate groups, and one from the vertebrata). — Lectures (twice a week) and laboratory work (four hours a week)		5 Se., 8 Ju., 8 So., 4 Sp., 2 Sc.	27
Dr. Ayers	6. Zoölogy (Second Course). — Lectures (twice a week) and laboratory work (six hours a week). — Types studied: Cartilaginous Fish (Raja), Bony Fish (Gadus), Bird (Columba), Mammal (Felis), including comparative osteology and myology of Man and Cat. Each member of the class prepared a thesis on some special topic in mammalian anatomy, based on personal investigation in laboratory		3 Se., 1 Ju., 1 Sp., 1 Sc.	6
Prof. Goodale	7. Botany (Second Course). — Lectures (twice a week) and laboratory work (six to eight hours a week). — Practical microscopical study of the histology and reproduction of flowering, and, to a certain extent, of flowerless plants. — Investigation of adulterations of various spices, cereal foods, etc. — Experimental vegetable physiology		1 Se., 3 Ju., 2 So., 2 Sc.	8
Mr. Thaxter	*23. Cryptogamic Botany. — Laboratory work (nine hours a week)	2d half-year	1 Gr., 1 Se., 1 Ju., 1 Sp.	4
Prof. Mark	*13. Microscopic Anatomy. — Lectures (twice a week) and laboratory work (about eight hours a week)	1st half-year	2 Gr., 1 Se.	3
Prof. Shaler	*14. Palaeontology. — Lectures (three times a week), laboratory work, and the preparation of theses		1 Gr., 8 Se., 1 Ju., 2 Sc.	12
Dr. Slade	*21. Comparative Osteology. — Laboratory work (three hours a week), with lectures and demonstrations		1 Se., 2 Ju., 1 So.	4

	COURSES FOR SPECIAL RESEARCH.			
Prof. Mark	*9. Embryology. — Investigation of special topics: Structure and origin of egg membranes in osseous fishes; origin of the Wolffian duct in Amphibia; histology and development of the compound eye in Homarus; histology and development of a Planarian; oögenesis in insects		3 Gr., 2 Se.	5
Prof. Hagen	*10. General Entomology		Omitted in 1887–88.	
Prof. Goodale	*11. Experimental Vegetable Physiology. — Laboratory work (two to six hours a week). — Studies on Plastids, the absorption of dilute solutions of coloring matters by living plants, anomalous growths on the roots of certain Leguminosae, and Sieve-tissue		3 Gr.	3
Prof. Farlow	*12. Structure and Development of Cryptogams. — Laboratory work and preparation of thesis		3 Gr.	3
Prof. Shaler	*17. Palaeontology. — Laboratory work, theses, and conferences		2 Gr., 1 Se.	3
	GEOLOGY.			
	1. Physical Geography and Meteorology (Elementary Course):			
Prof. Davis	*First half-year:* Lectures (twice a week), with laboratory work (one hour) on weather maps, etc., and frequent tests of work by writing and recitation		8 Se., 10 Ju., 7 So., 15 Fr., 3 Sp., 2 Sc.	45
Mr. Harris	*Second half-year:* Lectures (twice or three times a week), with laboratory work on topographical maps and models, and frequent written exercises		10 Se., 9 Ju., 7 So., 10 Fr., 5 Sp., 2 Sc.	43
Prof. Davis	*20. Physical Geography and Meteorology (Second Course). — Work on maps and in thesis writing. — One field excursion of three days in New Jersey. — Materials: The topographical maps of New Jersey and manuscript essays by the Instructor		1 Se.	1

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Shaler	4. Geology. — Lectures, with designated reading	2	1 Gr., 1 Se., 21 Ju., 85 So., 57 Fr., 33 Sp., 1 Di., 2 Sc.	151
Mr. Harris	4*a*. Geology. — Laboratory work (four hours a week), with occasional lectures, until the spring recess. After the spring recess, field work (one afternoon a week for six weeks)		2 Gr., 1 Se., 9 Ju., 17 So., 18 Fr., 7 Sp., 1 Sc.	55
Profs. Shaler and Davis and Mr. Wolff	*8. Geology (Second Course). — Lectures (twice a week). — Field-work (about three hours a week). — Theses		2 Gr., 14 Se., 12 Ju., 2 So., 3 Sp., 2 Sc.	35
Prof. Shaler	*15. Historical Geology. — Laboratory work, theses, and conferences		4 Gr., 1 Se., 3 Sc.	8
Prof. Shaler	*16. Geological Field-work, for training in the principles of Geological Surveying		5 Gr., 7 Se., 2 Ju., 3 Sc.	17
Mr. Wolff	22. Petrography. — Lectures (twice a week), with practical instruction in laboratory, and laboratory work by the students (seven hours a week). — Occasional meetings for discussion of special papers bearing on the subject. — Special petrographical investigation by the more advanced students		4 Gr., 2 Se., 3 Sc.	9
Prof. Whitney	[*18. Mineral Veins and Metalliferous Deposits; their mode of occurrence and theories of their origin		Omitted in 1887–88.	
Prof. Whitney	[*24. North America: its Physical Geography and Geology; the past and probable future development of its material resources		Omitted in 1887–88.	

Before the Harvard Classical Club:

Ancient Vase Paintings in their Relation to the Iliad and to the later Greek Epics (three illustrated lectures), by Dr. JULIUS SACHS, of New York.

Before the Harvard Philosophical Club:

Ethics and Culture, by Professor FELIX ADLER, of New York.

The New Poetry, by Mr. ERNEST RHYS, of London.

Before the Harvard Finance Club:

The Cotton Manufacture and the Duties on Cotton Goods, by T. L. LIVERMORE, Esq.

A Possible Solution of the Silver Question, by Professor ANDREWS, of Brown University.

The Treasury Surplus, by HORACE WHITE, Esq.

The Tariff from the Standpoint of the Laborer: an Object Lesson in Tariff Reform, by the Rev. JOHN G. BROOKS, of Brockton.

The Protective System, by HENRY CABOT LODGE, Esq., of Nahant.

Before the Students of History 20:

The Materials of Historical Study, by Professor EMERTON.

The Materials of American History, by Professor CHANNING.

How to Find Historical Materials, by Professor HART.

In the Jefferson Physical Laboratory (illustrated lectures):

Spectrum Analysis, by Professor TROWBRIDGE.

Bridge Building, by Professor CHAPLIN.

Electric Lighting, by Dr. HALL.

Matter in Motion, by Dr. WHITING.

Before the Harvard Natural History Society:

Beetles, by Mr. GEORGE DIMMOCK.

Sponges, by Professor HYATT, of the Massachusetts Institute of Technology.

New England Star-fishes and Sea-urchins, by Dr. J. WALTER FEWKES.

Recent Discoveries in Glacial Geology, by Professor G. FREDERICK WRIGHT, of the U. S. Geological Survey.

In the scheme of instruction for the year 1888–89, announced by the Faculty in May, courses for Special Study and Research appear in three departments, — German, Romance Philology, and Physics, — in addition to the seven in which such courses had been previously established. In Greek a course of six introductory lectures is provided for Freshmen, to be given at different times during the year, in connection with the work in Courses *B* and *C*, two on Socrates and Plato, by Professor Goodwin; two on Homer, by Professor Wright; and two on the Greek drama, by Professsor J. W. White. The list in the same department contains also two new half-courses: on the Syntax of the Greek moods and tenses, by Professor Goodwin, and on Greek Epigraphy, by Professor Wright; and a full course on the plays of Aristophanes, with lectures on the scenic and private antiquities, by Professor J. W. White. In Romance Philology also three new titles appear: Historical Italian Grammar and the French element in English, two half-courses, to be given by Mr. Grandgent and Professor Sheldon, respectively; and the French Dialects, with special reference to Anglo-Norman, a full course, by Professor Sheldon. The elective half-course in Elocution was revived in accordance with the recommendation of the Board of Overseers. In Physics a reorganization of the instruction was made necessary by the retirement of Professors Lovering and Gibbs, and the following scheme of courses (in addition to the elementary courses in experimental physics, *B* and *C*) was adopted: —

1. General Descriptive Physics. Professor HALL.
2. Sound and Color, with special applications to electrical and telephonic apparatus and to photography. Dr. WHITING.
3. Electrostatics, Electrokinematics, and parts of Electromagnetism. Professor B. O. PEIRCE.
4. Electrodynamics, Magnetism, and Electromagnetism. Professor TROWBRIDGE.
5. Light. Professor TROWBRIDGE.
6. Thermodynamics and the Kinetic Theory of Gases. Professor B. O. PEIRCE.
7. Heat Engines and Dynamos.
8. The Mathematical Theory of Electrostatics and Electrokinematics. Professor B. O. PEIRCE.
9. The Mathematical Theory of Electrodynamics and Electromagnetism. Professor HALL.

Of these courses, 7 and 8 are not to be given until next year. Under the head of Special Advanced Study and Research the following topics are proposed: —

(*a*) Spectrum Analysis. Professor TROWBRIDGE.
(*b*) Electrostatic Measurement. Professor B. O. PEIRCE.
(*c*) Sound and Electricity. Dr. WHITING.
(*d*) Electromagnetism. Professor HALL.

The College list of courses of instruction announced for the present year contains one hundred and thirty-eight which are rated as full courses, sixty-one rated as half-courses, and eight (advanced courses for the investigation of special topics) which may be taken either as full or as half-courses according to the instructor's estimate of the amount of work demanded by the topic selected; making a total of two hundred and seven courses offered. In this statement the courses for special research, now established in ten departments, are dealt with as follows: where topics proposed by several instructors have been announced in advance, each topic is counted as a course, — many of them having, in fact, formerly stood on the list as independent courses, and having undergone no change except in the form of announcement; where, on the other hand, no topics have been announced, as is the case in English, German, Romance Philology, and Political Economy, it has been possible to credit each department with only one course.

The computation of the number of hours per week of instruction offered becomes more and more difficult, and the result more artificial and unsatisfactory, as our system becomes more complex and elastic. For purposes of comparison, however, the table of statistics on this subject given in previous reports has been continued for the year 1887–88, and is submitted with this explanation: in courses which consist wholly or chiefly of laboratory work, three hours have been assigned in every case to a full course and half as much to a half-course, that being the usual amount in other departments of study; in courses for special research (not laboratory courses) the estimate is based on information received from the instructors concerned; in courses where one exercise a week is held or omitted 'at the pleasure of the instructor,' such exercise is credited with half an hour a week. The table is given on page 78.

In the announcement of instruction for the present year the Faculty added Italian, Spanish, and Music to the list of departments from which a Freshman may choose his elective studies; his choice, however, being limited to one of the two languages named. The last column of the following table shows the number of Freshmen now pursuing studies in each of the departments open to them. The figures for the four previous years have been corrected to conform to the record as it stood at the end of each year, and give the number of students who not only chose but carried through the studies in question.

	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
Whole number of Freshmen	255	258	269	280	310
Number of Freshmen taking one or more elective studies in					
Greek	162	126	140	109	131
Latin	193	185	206	184	196
German	26	35	39	50	71
French	82	102	130	125	140
Italian	. .	. .	. .	. .	18
Spanish	. .	. .	. .	. .	6
History	117	134	119	139	169
Music	. .	. .	. .	. .	11
Mathematics	120	87	132	127	135
Physics	19	17	36	31	32
Chemistry	12	19	49	53	58
Natural History	50	80	79	91	84
Number of Freshmen whose choice includes studies in Greek, Latin, and Mathematics	59	33	60	32	41

ELECTIVE STUDIES.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
Semitic Languages	3	4	4	11	8	13	16	17	17	17	18	19
Sanskrit and Zend	3	6	6	11	10	10	10	10	10	10½	12	12
Greek	23	24	26	29	25	25½	26	41	37½	38	37	37
Latin	18	22	18	22	26	23	27	33	38½	33	36½	38
Greek and Latin .	2	2	3	3	8	3	6	8½	6½	6	6	3
English	14	15	16	16	10	15	15	19½	19½	17	23	26
German	19	24	25	22	23	23	21	20	20	21	17½	23
French	15	15	15	14	18	14	16	22	22	22	21	22
Italian and Spanish	17	19	20	20	20	18	12	18	21	19½	18	18
Romance Philology										3	5	9
Philosophy . . .	15	21	26	27	20	24	24	25½	27	30	29	26
Political Economy	6	6	9	9	7	7	14½	14½	16½	21	22½	17
History	23	25	25	30	35	35	32½	33	29	31½	40½	60
Roman Law . . .	3	3	4	4	5	4	4	4	4	4	3	3
Fine Arts	6	9	8	6	8	11	11	7	10½	12½	14	11
Music	12	13	13	15	14	14	15	15	14	14	11	8
Mathematics . .	24	28	30	26	26	24	25	37½	43½	47½	44	42
Physics	17	22	21	19	19	20	23	23	23	25½	27	33
Chemistry . . .	18	21	26	26	23	23	26	24	24	30	36	33
Natural History .	24	30	42	46	36	45	49	49	58	58	54	60
Total, elective.	262	308	337	356	347	351½	373	421½	441½	461	475	500
PRESCRIBED STUDIES.												
Greek	3	6	6	6	6	6	6	. .	. .	. .	. .	. .
Latin	3	6	6	6	6	6	6	. .	. .	. .	. .	. .
Greek and Latin .	½	½	½	½	½	½	½	. .	. .	. .	. .	. .
English (Rhetoric)	2	2	2	2	2	2	2	3	3	3	3	3
German	3	3	3	3	3	3	3	3	3	3	3	3
French	3	3	3	3	3	3	3	3	3	3	3	3
Philosophy . . .	2	2	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
History	2	2	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mathematics . . .	3½	7	7	7	7	7	7	. .	. .	. .	. .	. .
Physics	2	2	4	4	4	4	4	½	½	½	½	½
Chemistry	½	½	½	½	½	½	½	½	½	½	½	½
Total, prescribed.	24½	34	32	32	32	32	32	10	10	10	10	10
Total, prescribed and elective.	286½	342	369	388	379	383½	405	431½	451½	471	485	510

In the requirements for Honors in Natural History the Faculty rescinded so much of the rule as demanded of a candidate a course of summer study in the laboratory or the field. Advanced work, however, in the summer school of geology will be accepted, as heretofore, in lieu of one course in that study in satisfaction of the requirements for Honors, though it cannot be counted towards the degree. On the other hand, the Faculty adopted provisionally a rule by which work in the summer schools equivalent to certain elementary courses,— History 17, Physics *B*, Chemistry *B*, Natural History 3 and 4,—if performed satisfactorily and properly tested by examination, may be counted in the same way as if done in those courses in College. The number of students who availed themselves of this privilege was, however, very small.

Besides these matters of routine business, several questions of a general character engaged the attention of the Faculty in the course of the year.

The vexed question of athletic sports was brought before the Faculty by a communication from the President and Fellows, received May 15, transmitting certain votes of the Board of Overseers, and requesting the Faculty to examine the whole subject and make a report thereon to the Corporation. The prosecution of this inquiry was entrusted to a committee consisting of Professors J. W. White, Chaplin, and Hart, who at once proceeded to collect all the available information bearing on the history of athletic sports and their regulation at this College, on their mental and moral effects on the students, and on the connection of intercollegiate contests with certain abuses which they were alleged to occasion or promote. The results of their investigation were presented to the Faculty June 12 in an able report with exhaustive statistics, for which they received the thanks of the Faculty. As this report has been published and widely circulated, it is unnecessary to recapitulate its contents here. The conclusion of the committee was in substance that athletics, as managed during the past few years, are a valuable feature of college life, though liable to some abuse, and should therefore be encouraged under suitable supervision. They accordingly recommended that prompt measures be taken to provide additional playgrounds for the students, the present grounds being not only inadequate but likely to be encroached upon by new buildings, and to add an extension to the already overcrowded Gymnasium; and they further suggested important changes in the constitution, powers, and responsibilities of the Committees on Athletics. The Faculty adopted the recommendations of the committee in regard to playgrounds and the Gymnasium, and passed the following votes in regard to the Committee on Athletics:—

1. That the Committee on the Regulation of Athletic Sports shall hereafter be constituted as follows: of three graduates of the College; of three members of the College Faculty, — these six members to be appointed by the Corporation; and of three undergraduates, who shall be chosen during the first week of the College year by the majority vote of the following students, — the presidents of the Senior, Junior, and Sophomore classes, and a representative from each of the following athletic organizations, — the Boat Club, the Cricket Club, and the Athletic, Base Ball, Foot Ball, Lacrosse, and Tennis Associations, who shall be called together for the purpose of making this choice by the President of the University.

2. That this Committee shall have full power over all matters relating to athletics and athletic contests, subject to such general regulations as the College Faculty may from time to time adopt. It shall present two written Reports each year to the Faculty.

3. That this Committee shall hold office for one year, beginning at the opening of the academic year.

The Faculty also voted to reaffirm and adopt the following regulations on athletic sports: —

1. No match games, races, or athletic exhibitions shall take place in Cambridge except after the last recitation hour on Saturday, or after four o'clock in the afternoon.

2. No College club or athletic association shall play or compete with professionals.

3. No person shall assume the functions of trainer or instructor in athletics upon the grounds, or within the buildings of the College, without authority in writing from the Committee.

4. No student shall enter as a competitor in any athletic sport, or join as an active member any College athletic club, including base ball, foot ball, cricket, lacrosse, and rowing associations, without a previous examination by the Director of the Gymnasium, and his permission so to do.

5. All match games outside of Cambridge shall be played upon Saturday, unless permission to play on other days is first obtained from the Committee.

These votes, with the report of the committee, were sent to the Corporation for their approval.

The Faculty considered another subject connected with the general question of physical exercise, — the health of holders of scholarships. The health of a student is unquestionably an important factor in determining the measure of his future usefulness, and is therefore not to be overlooked in the administration of scholarships, which have for their chief aim the equipment of men for service to the community. Yet it is far from possible to foresee what effect a young man's health will have on his future career, — to tell, for example, which of two youths, one robust and the other delicate, will prove more useful to his fellow men. The strong do not live the longest, nor is usefulness always measured by length of years. The Faculty abstained from establishing a hard and fast rule on the subject, and contented themselves with insisting on the duty of holders of scholarships to take proper care of their health. The vote passed was: That the Dean be instructed to inform holders of scholarships that they are expected to present themselves twice in the year before the Director of the Gymnasium, to be examined as to their physical condition, and to receive suggestions as to the care of their health.

At the instance of the Faculty of the Lawrence Scientific School, the Faculty considered the question of transferring the power of recommending canditates for the degree of Bachelor of Science from the Scientific to the College Faculty. The discussion of this subject developed a considerable diversity of opinion, and a vote was finally passed expressing the willingness of the Faculty to assume the responsibility proposed, without, however, recommending that the change be made.

Early in December the following vote of the Academic Council of the University was communicated to the Faculty: "*Voted* that, with a view to lower the average age at which Bachelors of Arts of Harvard College can enter the professional schools and the Graduate Department, the College Faculty be requested to consider the expediency of a reduction of the College course." The question proposed by the Council was discussed at some length, but the Faculty found it impossible to secure sufficient time from routine business to give it the consideration which its importance demands; so that no definite conclusion was reached.

The subject requires the fullest and most careful consideration, which must embrace not only the college course but the whole training of the student from the time he first goes to school. That a properly systematized preparatory course would bring the young man to the doors of the College at a considerably earlier age than his nineteenth year is hardly open to question. The fault, it must be said, is not chiefly in the secondary schools, but lower down, and hence not within the reach of such influence as the College can exert directly. Still, there is a strong conviction in the minds of many who have given the matter their attention that a higher stage of preparation could and would be reached by the schools if adequate inducements were offered to the pupil, and that, therefore, if the age of graduation is to be lowered, as the Council proposes, the loss of time need not be, to the same extent, a sacrifice of training. Some indication of the ability of the schools to carry their pupils beyond the point required for admission to College is afforded by the statistics of the examinations of the present year. From the tables on pages 40, 41, the following statement is deduced of the number of candidates who presented themselves for examination on advanced studies beyond the bare requirement for admission: —

Candidates who presented advanced studies exceeding the required amount by one half-course	14
" one course	39
" one and a half courses	7
" two courses	14
" three "	2
" three and a half courses	1
" four courses	3
Total	80
Percentage	25.3

Only three of the persons included in the list were candidates for advanced standing. It appears, then, that about one fourth of the candidates who came up this year, — and, of course, a larger proportion of those admitted, — had, without any special inducement to do so, pursued studies not required for their admission, and pursued them with such thoroughness that they were willing to present themselves for examination in them. The larger liberty of choice provided by the present system has contributed to increase the number of such voluntary examinations by presenting a greater number of points of contact for the various qualifications of the candidates. This is shown in a very striking way by the following table, which gives the number and the percentage of candidates who in the past five years have presented themselves for examination in studies not required for their admission to the Freshman class.

	Old Method.				New Method.
	1884.	1885.	1886.	1887.	1888.
Whole number of candidates .	307	319	308	247	315
Candidates examined on studies in excess of requirement:					
Number	44	47	52	39	80
Percentage	14.3	14.7	16.9	15.8	25.3

The statistics for past years are not made out in such form as to enable me to state how many of these candidates took further examinations for advanced standing, but the number is in every case very small, and, so far as the comparison between the several years is concerned, is of no consequence.

The question proposed by the Council will be taken up again by the Faculty this year. I have stated in my last report the reasons which make it important, in my judgment, that a new line be drawn between the undergraduate course on the one side and the Graduate Department and the professional schools on the other. The chief of these was the obstacle which the present line opposes to the growth of the Graduate Department, which suffers much more than the professional schools from the present system. The student who proposes to be a clergyman or a lawyer or a physician must go to the professional school, even if he is not graduated from college until he is twenty-two. The student who proposes to teach will stay away from the Graduate Department, for unfortunately public opinion in this country does not yet demand professional training for the teacher.

CLEMENT LAWRENCE SMITH, *Dean.*

December, 1888.

THE GRADUATE DEPARTMENT.

To the President of the University:

Sir, — I have the honor of submitting the following report of the state of the Graduate Department for the academic year 1887–88: —

The whole number of students registered in the Department, omitting three, named in the Catalogue, who withdrew early in the year, was ninety-seven; of whom eighty-four were classed as resident students, and thirteen as non-resident students. The former class includes all students in actual regular attendance at the University, whether lodging in Cambridge or not, and also students in Natural History engaged in regular courses of special study, and absent from Cambridge for moderate portions of the year for the purpose of doing field-work belonging to their studies.

The following table shows how the students registered in the Department were occupied, and what was the proportion among them of graduates and non-graduates of this University: —

Resident Students exclusively engaged in their work as students for the whole academic year	48	
Resident Students only partially engaged in their work as students, or not for the whole year	36	84

Non-Resident Students holding fellowships	10	
Non-Resident Students not holding fellowships	3	13

Students (wholly or mainly) in Philology	28	
Students in Philosophy, History, Law, Political Science, Fine Arts, and Music	31	
Students in Mathematics, Physics, and Chemistry	21	
Students in Natural History	17	97

Students admitted to the Graduate Department in a previous year	45	
Students first registered in 1887–88	52	97

Harvard Bachelors of Arts or Science, not previously graduated elsewhere	60	
Harvard Bachelors of Arts, previously graduated elsewhere	7	
Students not holding the Harvard degree of A.B. or S.B.	30	97

Harvard Bachelors of Arts or Science, not holding the Harvard degree of A.M., Ph.D., or S.D.	51	
Students holding the Harvard degree of A.M.	19	
Students holding no Harvard degree in Arts, Philosophy, or Science	27	97

Thirty-eight resident and eight non-resident students of the year 1887–88 are still members of the Graduate Department; of whom three formerly resident are now non-resident, and three formerly non-resident are now resident.

The number of degrees given at the end of the year 1887–88 to graduate students, or on recommendation by the Academic Council, is exhibited in the following table: —

A.B. to resident graduate students, on recommendation by the College Faculty	2	
A.M. to resident graduate students	26	
A.M. to professional students on special courses of study	6	
A.M. to professional students with a professional degree	16	
Ph.D. to resident graduate students	6	
Ph.D. to a non-resident graduate student	1	57

A.M. or Ph.D. to Harvard Bachelors of Arts	42	
A.B., A.M., or Ph.D. to persons not Harvard Bachelors of Arts	15	57

A.B., A.M., or Ph.D. to graduate students	35	
A.M. to professional students	22	57

Of the seven students who received the degree of *Doctor of Philosophy*, one was a student in Classical Philology, two in English Philology, two in Chemistry, one in Botany, and one in Geology.

Since the year 1872, in which the Graduate Department was instituted, sixty-five persons have now received the degree of Ph.D. or S.D.; one hundred and forty-seven the degree of A.M. for non-professional studies; and one hundred and fourteen the degree of A.M. for professional studies.

The appointments to fellowships for the year 1887–88 were made at the close of the preceding academic year, and are named in my last annual report. In accordance with these appointments, the *Parker Fellowships* were held by Messrs. M. W. Haskell, studying Mathematics at Göttingen; H. T. Hildreth, studying Classical Philology at Berlin; J. W. Mack, studying Comparative Law at Berlin; and A. G. Webster, studying Physics at Berlin; — the *Kirkland Fellowship* was held by Mr. L. E. Gates, studying Literature and History at Berlin; — the *Walker Fellowship*, by Mr. G. Santayana, studying Philosophy at Berlin; — the *Tyndall Scholarship*, by Mr. H. H. Brogan, studying Physics in Paris; — the *Harris Fellowship*, by Mr. W. F. Osgood, studying Mathematics and Physics at Göttingen; — and the *Rogers Fellowships*, by Messrs. G. R. Carpenter, studying Comparative Literature at Berlin, and E. N. Snyder, studying Philology at Berlin.

Messrs. Brogan, Haskell, and Hildreth, having held their fellowships for three years, the full period of time allowed, and Mr. Carpenter, having held his fellowship for two years, were retired at the close of the academic year; and the following new appointments were made for the year 1888–89: To *Parker Fellowships*, Theodore William Richards, S.B. (*Haverford College*) 1885, A.B. 1886, Ph.D. 1888, a student of Chemistry; and W. F. Osgood, promoted from the Harris Fellowship; — to the *Tyndall Scholarship*, Daniel William Shea, A.B. 1886, A.M. 1888, a student of Physics; — to the *Harris Fellowship*, Maxime Bôcher, A.B. 1888, a student of Mathematics; — and to a *Rogers Fellowship*, Frank Louis Van Cleef, A.B. (*Oberlin College*) 1884, (*Harvard Univ.*) 1885, a student of Greek. Messrs. Gates, Mack, Santayana, Snyder, and Webster were reappointed.

The number of applicants to the Academic Council for appointment to the above fellowships, besides candidates for reappointment, was twenty-seven. Of these, seven were students in Philology and Literature; eight in Philosophy, History, and Political Science; and twelve in the Mathematical and Natural Sciences. Fifteen were graduate students of the University; two were professional students; nine were members of the Senior class of Harvard College; and one was unconnected with the University. Fifteen were Harvard Bachelors of Arts. A few additional applications were made to the College Faculty, which has charge of the administration of the Harris and Rogers Fellowships.

The *Robert Treat Paine Fellowship of Social Science* was bestowed for the first time during the year 1887–88. It was given to Edward

Cummings, A.B. 1883, A.M. 1885, who entered on the fellowship at the beginning of the fourth quarter of the year, and will spend the current academic year in London and Paris, in the practical and theoretical study of sociological questions.

The *Morgan Fellowships*, which require residence at the University, were held by the following persons, appointed at the close of the year 1886–87: Messrs. J. N. Anderson, a student of Classical Philology; J. L. Markley, a student of Mathematics; A. B. Philputt, a student of Classical Philology; T. W. Richards, a student of Chemistry; W. C. Sabine, a student of Physics; and W. A. Setchell, a student of Botany. Messrs. Anderson, Philputt, Richards, and Setchell having withdrawn at the close of the year, the following persons were appointed: William Herbert Carruth, A.B. (*Univ. of Kansas*) 1880, A.M. (*Ibid.*) 1882, Professor of German in the University of Kansas, to pursue Germanic studies; Charles William Colby, A.B. (*McGill Univ.*) 1887, to study History; Herman Wadsworth Haley, A.B. (*Amherst College*) 1887, A.M. 1888, to study Classical Philology; Charles William Woodworth, S.B. (*Univ. of Illinois*) 1885, S.M. (*Ibid.*) 1886, to study Zoölogy. Mr. Woodworth having subsequently resigned, his place has been filled by the appointment of August Frederic Foerste, A.B. (*Denison Univ.*) 1887, A.M. 1888, who is a student of Geology. Messrs. Markley and Sabine were reappointed.

The number of applicants for Morgan Fellowships, besides candidates for reappointment, was twenty-nine; of whom six were students in Philology; seven in Philosophy, History, and Political Science; ten in Mathematics, Physics, and Chemistry; and six in Natural History. Seventeen had never been students of this University; two had attended a Summer school; six were graduate or professional students, but not graduates of the University; three were undergraduates; and one was a Harvard Bachelor and Master of Arts, desiring to return to the University for further advanced study.

Seventeen resident graduate students of the year 1887–88 held Thayer, Townsend, and Shattuck Scholarships, on recommendation by the College Faculty, the nominees being selected from among the applicants for these scholarships and the unsuccessful applicants for Morgan Fellowships, and being appointed at or before the beginning of the year. Twenty-seven resident graduate students of the current year, similarly selected and appointed, hold such scholarships at present. The increase which has taken place in the last few years in the number of these appointments has proved highly beneficial to the development and healthy condition of the Graduate Department. But the limitation of the Shattuck Scholarships to students of

Languages and of Mathematics considerably hampers the committee which has charge of the award. I must still urge that, to enable the Graduate Department to make use of the opportunities of growth which seem to be now opening to it, and to strengthen its position as a resort for some of the most promising and ambitious young men who are graduated from the many reputable colleges of the country, the establishment of additional scholarships, of the annual value of at least $250 each, for the benefit of graduate students, is greatly to be desired.

Four dissertations were offered in competition for the Sumner prize, and two dissertations for the Toppan prize, for 1887–88. The Sumner prize for 1886–87 was awarded at the beginning of the year 1887–88; this being the first award that has been made of the Sumner prize. The committee on the Toppan prize for 1886–87 declined to award the prize.

JAMES MILLS PEIRCE,
Secretary of the Academic Council.

CAMBRIDGE, 24 NOVEMBER 1888.

THE DIVINITY SCHOOL.

To THE PRESIDENT OF THE UNIVERSITY:

SIR, — As Dean of the Divinity Faculty, I beg to submit the following report for the academic year 1887–88: —

Seventeen students were connected with the School during the year, as follows:

Resident Graduates	4
Senior Class	3
Middle Class	2
Junior Class	8
Special Students	1

From College students there were one hundred and fifty-one choices of courses which were originally announced for the Divinity School, but which are now accepted for the degree of A.B. In addition to these, two students of the College took, as an extra, one course not accepted for the degree of A.B.

The Resident Graduates represented Yale Theological Seminary, the Western Theological Seminary, the South Baptist Theologica Seminary, and the Meadville Theological School.

Only two received the degree of B.D., as one member of the Senior class died during the year.

Professor Toy was away during the year on leave of absence. James Richard Jewett, A.B., was appointed for the year instructor in Hebrew and other Oriental languages, and proved a very acceptable and successful teacher.

Besides their courses in connection with the Divinity School, Professor Lyon and Mr. Jewett gave, in the College, courses in Assyrian and Arabic. Courses in Aramaic were offered to Divinity students, as well as others, but there were none who elected them.

A special course of six lectures was given by officers of the University who are not teachers of the School. The lectures were as follows: —

Ministers as seen by a Layman: HENRY LEE, A.M., of the Board of Overseers.

The Health of Professional Men: FRANCIS MINOT, A.M., M.D., Professor of the Theory and Practice of Physics.

Some Conditions of Intellectual Life in America: CHARLES ELIOT NORTON, LL.D., Professor of the History of Art.

The Relation of Law to the Supernatural: JAMES BRADLEY THAYER, A.B., LL.B., Professor of Law.

Intimations of Immortality in the Sonnets of Shakspere: GEORGE HERBERT PALMER, A.M., Professor of Philosophy.

Harvard's Contributions to Astronomy: EDWARD CHARLES PICKERING, A.M., S.B., Professor of Astronomy, and Director of the Observatory.

These lectures proved both interesting and valuable. They were given in the Chapel of the Divinity School, which in some cases was too small to hold all who desired to hear them. I acknowledge with pleasure the kindness of the gentlemen connected with various departments of the University who so readily accepted the invitation to take part in this course.

In 1887–88 the School enjoyed for the first time the use of the new library building. It proved both pleasant and convenient, and now appears to have been indispensable to the best work of the School. The use of the library has increased at least three-fold since the change.

By the erection of the new building, the space in Divinity Hall that had been given up to the library and to lecture rooms was set at liberty. With the exception of the Chapel, Divinity Hall is now entirely used for students' chambers. By the change six additional rooms are gained, and one room that had been encroached upon by a lecture room was restored to its original proportions. The addition to the rent of the building that comes from these sources is $350.

There were on the first of October last in the library 20,815 volumes and 2393 pamphlets. There were added between October 1, 1887, and October 1, 1888, 4027 volumes and 61 pamphlets. On the other hand, the library has been diminished by the sale of 995 volumes which were duplicates, for which $582.15 were received above the expenses of the sale. This money has been devoted to the purchase of new books, being divided among the different departments. During the last year the valuable gift of books from the library of the late Professor Ezra Abbot, presented by Mrs. Ezra Abbot, were placed upon the shelves. This gift includes 3770 volumes. Forty-eight volumes, presented by the late Rev. James Freeman Clarke, have also been placed on the shelves. Valuable donations from Professor Charles E. Norton, made year before last, and John T. West of Tiverton, made the last year, cannot now be definitely reported, as they have not yet been made available for use.

The removal of the library to the new building made imperative what had long been desirable, a new arrangement and cataloguing of the books. The last year all the books were classified and arranged upon the shelves in accordance with the classification. They were also relabeled within and without. All needful preparations were made for commencing a card-catalogue this year. The School is indebted to the experience, ingenuity, and efficiency of the librarian, D. J. H. Ward, Ph.D., for much of the success with which these changes have been accomplished. Professor Thayer, the chairman of the Library Committee, has also given much time and thought to the matter.

A gift of $1175 was received from Rev. John William Quinby of East Bridgewater, Mass., who graduated from the School in 1871. The gift has a special interest from the fact that it represents the beneficiary money received by Mr. Quinby while he was a student, with interest reckoned from the time of receipt.

A table of courses and attendance is added. Besides the formal instruction of the School, which is represented by the table, there were held, in connection with the departments of the Old and the New Testament, informal meetings of students with the instructor. These meetings are known as "Seminaries," and are held at the house of the Professor. They furnish an opportunity for considering matters that do not come up in the regular teaching of the class-room; and are especially valuable as bringing teacher and students into closer relation in their common work.

C. C. EVERETT, *Dean.*

Instructors.		No. of hours per week.	Attendance.	
			Divinity Students.	College Students.
	OLD TESTAMENT.			
Mr. Jewett	Hebrew. — Harper's Hebrew Method and Manual. — Harper's Elements of Hebrew. — Explanation of parts of the Pentateuch, Historical Books, and Psalms	3	4	3
Prof. Lyon	Hebrew (Second Course). — Interpretation of parts of the Prophets and Poetical Books	2		2
Prof. Lyon	History of Israel, political and social	2	7	2
	NEW TESTAMENT.			
Prof. Thayer	New Testament Times: — the political, social, moral, and religious Condition of the World when Christ appeared	2*	3	
Prof. Thayer	Outline Lectures on Theological Encyclopaedia and Literature; the Characteristics of the New Testament Greek; the Septuagint; Textual Criticism; Hermeneutics; the Life of Christ. — Study of the Gospels. — Essays and Criticisms	2		
Prof. Thayer	Lectures on our English Bible and its recent Revision. — Lectures on topics in Biblical Theology. — Exposition of Different Texts: — Outline lectures on the Life of Paul; Study of the Epistles; Essays and Criticisms	3	2	
Prof. Thayer	New Testament Introduction: — the Origin, Contents, and History of the New Testament Writings, together with the Formation of the Canon	2†	9	
	CHURCH HISTORY.			
Prof. Emerton	The Conflict of Christianity with Paganism. — Origin and Development of the Roman Primacy to its Alliance with the Holy Roman Empire, A.D. 800	2	6	17
Prof. Emerton	The Mediaeval Church, with especial reference to its effect upon public life and upon intellectual and social progress		4	19
Prof. Emerton	History of Christian Doctrines	2	1	
Prof. Emerton	Advanced Study and Research. — Subject for 1887–88: Topics in Church History in Connection with Courses 1 and 2	2	1	4

* During the first half-year.

† During the second half-year.

	COMPARATIVE RELIGION.			
Prof. Everett	Studies in the Comparative History of Religions, particularly the Vedic Religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese Religions	2		7
	THEOLOGY.			
Prof. Everett	Systematic Theology begun: The Psychological basis of Religious Faith	1	6	2
Prof. Everett	Systematic Theology continued: The Content of Christian Faith	3	9	1
	ETHICS.			
Prof. Peabody	The Practical Ethics of Social Reform. — An examination of the problems of Charity, Temperance, Labor, Divorce, Prisons, the Indian question, etc. — Lectures, Essays, and the study of Institutions	2	8	93
	HOMILETICS AND PASTORAL CARE.			
Prof. Peabody	The Structure and Analysis of Sermons	1	7	
Profs. Everett and Peabody	Each student writes six sermons during the year, three of which are preached before the two upper classes and criticised by students and instructor; the rest are criticised privately, both as to composition and delivery, in preparation for the public preaching named below		7	
Prof. Peabody	Pastoral Care and the Conduct of Christian Worship. Lectures	1*	11	
	ELOCUTION.			
Mr. Kirby	1. Vocal Development; Vocal Expression; Criticisms on Delivery	7	2	2
Mr. Kirby	2. Vocal Development; Action Development; Vocal and Action Expression; Bible and Hymn Reading; Criticism on Delivery	5	2	
Mr. Kirby	Private Instruction in Elocution	12	5	5
	GENERAL EXERCISES.			
	Preaching by students in the Chapel of the School, open to the public. Once a week. — Meetings for Debate. Once in two weeks. — Meetings for Religious Conference, conducted by students, alternating with the above. Once in two weeks. — Morning Prayers, conducted by professors and students.			

* During the second half-year.

THE LAW SCHOOL.

To the President of the University:

Sir, — I beg to submit the following report upon the Law School for the academic year 1887–88: —

The table on p. 93 gives the courses of study and instruction during the year, the names of the instructors, the text-books used, the number of exercises per week in each course, and the number of students who offered themselves for examination in each course at the end of the year.

The following table exhibits the attendance at the School during the last eighteen years: —

Year.	Whole no. of students.	No. present during the whole year.	No. present only part of the year.	Average number.
1870–71	165	107	58	136
1871–72	138	107	31	123
1872–73	117	109	8	113
1873–74	141	121	20	131
1874–75	144	130	14	137
1875–76	173	153	20	163
1876–77	199	168	31	184
1877–78	196	172	24	183
1878–79	169	137	32	154
1879–80	177	138	39	157
1880–81	161	136	25	149
1881–82	161	139	22	146
1882–83	138	120	18	129
1883–84	150	130	20	140
1884–85	156	139	17	148
1885–86	158	142	16	151
1886–87	188	160	28	174
1887–88	225	197	28	211

The following table exhibits the School as divided into classes since the establishment of the three-years' course and the examination for admission: —

Year.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
First . . .	72	63	78	57	61	59	58	75	55	75	89
Second . .	79	50	32	58	41	38	40	37	46	47	55
Third . .	.	.	21	14	25	20	22	17	17	24	33
Special Students	31	47	46	32	34	21	30	28	40	42	46
Resident Graduates	.	.	.	.	.	.	.	.	.	.	2

Instructors.	Studies and Text-books.	Exercises per week.	No. of students examined.
	FIRST YEAR.		
Prof. Keener	Contracts. Langdell's Cases on Contracts	3	98
Prof. Gray	Real Property. No text-book	2	87
Mr. Schofield	Torts. Ames's Cases on Torts	2	91
Prof. Ames	Civil Procedure at Common Law. Ames's Cases on Pleading	1	92
Prof. Thayer	Criminal Law and Criminal Procedure. No text-book	1	109
	SECOND YEAR.		
Prof. Ames	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	24
Prof. Keener	Contracts. No text-book	2	45
Prof. Thayer	Evidence. No text-book	2	42
Prof. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases in Equity Pleading	2	37
Prof. Gray	Property. No text-book	2	48
Prof. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	16
Prof. Ames	Trusts. Ames's Cases on Trusts	2	40
	THIRD YEAR.		
Prof. Keener	Agency. No text-book	2	29
Prof. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases on Equity Jurisdiction	2	24
Prof. Ames	Partnership and Corporations. Ames's Cases on Partnership	2	29
Prof. Langdell	Suretyship and Mortgage. No text-book	2	21
Prof. Thayer	Constitutional Law.[1] No text-book	2	6
Prof. Gray	Law of Persons. No text-book	1	22
Prof. Gray	Wills and Administration. No text-book	1	18
Prof. Keener	Conflict of Laws.[1] No text-book	1	0
Prof. Ames	Points in Legal History.[2] No text-book	1	0
Prof. Ames	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	7
Prof. Keener	Contracts. No text-book	2	5
Prof. Thayer	Evidence. No text-book	2	3
Prof. Gray	Property. No text-book	2	1
Prof. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	9

[1] For the last half of the year.

[2] For the first half of the year.

In regard to the last table but one, it is to be observed that, although the three-years' course went into operation at the beginning of 1877–78, there was no third-year class until 1879–80. It is also to be observed that the second-year class of 1877–78 did not take the three-years' course, but was graduated at the end of the second year, that class having entered the School before the three-years' course went into operation.

The following table exhibits the results of the examinations for admission in each year since they were established: —

	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
Offered .	16	15	18	25	19	12	12	17	17	14	33
Admitted .	7	7	12	13	16	10	5	11	7	6	17

The following table exhibits the results of the examinations for a degree in each year since the establishment of the three-years' course: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877–78	66	51	15	66	47	19	.	.	.
1878–79	50	42	8	40	39	1	.	.	.
1879–80	73	69	4	28	26	2	22	18	4
1880–81	45	43	2	49	46	3	18	18	0
1881–82	49	44	5	38	37	1	36	33	3
1882–83	46	44	2	36	34	2	21	19	2
1883–84	51	41	10	35	31	4	26	25	1
1884–85	61	56	5	30	29	1	23	19	4
1885–86	54	48	6	41	38	3	18	18	0
1886–87	66	59	7	40	38	2	26	26	0
1887–88	80	70	10	43	34	9	33	32	1

In regard to the foregoing table it is to be observed that it includes no Special Students, and hence that all the applicants included in it were either graduates of colleges or had passed the examination for admission. Of course this remark does not apply to the second-year class of 1877–78, and this accounts in part for the much greater number of failures in that class.

The following table exhibits the number of students who have received the honor degree in each year since it was established: —

1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
7	8	10	10	5	5	7	9	9

The following table exhibits the number of students who, since the establishment of the three-years' course, have been examined for a degree in the studies of any year without having been members of the School during that year: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877–78	5	2	3	.	.	.	.	.	.
1878–79	3	2	1	.	.	.	.	.	.
1879–80	6	4	2	1	1	0	5	4	1
1880–81	6	4	2	.	.	.	4	4	0
1881-82	2	1	1	.	.	.	10	8	2
1882–83	3	3	0	.	.	.	3	2	1
1883–84	7	6	1	.	.	.	3	3	0
1884–85	3	2	1	.	.	.	6	4	2
1885–86	4	3	1	.	.	.	2	2	0
1886–87	3	3	0	.	.	.	4	4	0
1887–88	5	3	2	1	0	1	2	2	0

The following table exhibits the number of students who have entered the School in each year during the last eighteen years, and shows how many of them were graduates of colleges; and of the latter, how many were graduates of Harvard and how many of other colleges: —

Year.	Whole number of entries.	Graduates of colleges.	Harvard graduates.	Graduates of other colleges.	Non-graduates.
1870–71	105	60	19	41	45
1871–72	92	56	26	30	36
1872–73	87	47	22	25	40
1873–74	95	58	29	29	37
1874–75	102	55	40	15	47
1875–76	119	67	39	28	52
1876–77	128	77	47	30	51
1877–78	111	79	47	32	32
1878–79	102	62	38	24	40
1879–80	124	76	59	17	48
1880–81	91	60	41	19	31
1881-82	97	53	29	24	44
1882–83	84	56	33	23	28
1883–84	86	61	47	14	25
1884–85	101	79	56	23	22
1885–86	88	60	35	25	28
1886–87	113	80	46	34	33
1887–88	134	82	52	30	52

The following table exhibits the whole number of students who have been members of the School since the establishment of the three years' course, classified according to the states and countries from which they came: —

	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	Total.
Alabama	.	.	.	.	1	.	.	.	.	.	.	1
Arkansas	.	.	.	1	.	1	.	.	.	.	.	2
California	2	5	5	3	4	3	2	2	3	3	7	39
Cape Breton Island	1	.	1	.	1	.	.	.	.	.	.	3
Colorado	.	.	.	.	.	1	.	.	1	2	.	4
Connecticut	.	2	.	3	2	.	2	1	1	2	1	14
Delaware	2	1	.	.	1	.	1	.	.	.	.	5
District of Columbia	.	.	1	2	.	.	.	4	1	1	1	10
England	.	.	.	.	.	.	.	.	.	.	1	1
Florida	.	.	.	.	.	.	.	.	.	.	1	1
Georgia	.	.	2	1	1	.	.	.	1	.	.	5
Hawaiian Islands	.	.	.	.	.	.	.	.	.	1	.	1
Illinois	7	2	4	1	4	5	1	1	2	6	6	39
Indiana	.	.	.	1	1	1	.	.	.	3	.	6
Iowa	.	1	1	.	.	1	3	.	1	.	1	8
Japan	1	.	.	.	.	.	.	.	.	.	.	1
Kansas	.	1	.	.	.	.	.	2	1	.	1	5
Kentucky	1	1	2	.	1	2	.	1	.	1	2	11
Louisiana	.	.	1	.	.	.	.	.	.	1	1	3
Maine	3	4	6	5	2	4	5	2	.	5	3	39
Maryland	1	1	1	1	1	.	.	2	1	2	1	11
Massachusetts	44	51	69	35	38	30	46	49	39	46	52	499
Michigan	1	.	.	.	.	2	2	1	1	3	.	10
Minnesota	.	.	.	.	.	.	1	.	.	1	1	3
Mississippi	.	.	.	.	.	1	.	.	1	.	.	2
Missouri	1	1	3	.	1	1	2	1	2	2	2	16
Nebraska	.	.	.	.	.	.	.	.	.	.	1	1
New Brunswick	2	2	.	5	3	.	1	.	.	1	2	16
New Hampshire	5	2	6	2	1	3	.	4	2	3	7	35
New Jersey	1	4	1	1	1	.	.	1	1	.	1	11
New York	11	5	7	7	10	6	8	8	9	8	11	90
Nova Scotia	.	2	.	.	3	3	1	.	.	.	.	9
Ohio	10	2	4	10	8	4	1	6	6	6	8	65
Pennsylvania	3	6	.	1	2	3	4	2	3	4	5	33
Prince Edward Island	.	.	.	.	.	.	.	1	.	.	.	1
Rhode Island	2	1	.	1	.	1	1	2	.	3	2	13
South Carolina	2	.	1	.	1	2	1	.	2	.	.	9
Tennessee	.	1	.	1	.	.	.	.	.	1	3	6
Texas	.	1	1	.	2	1	.	.	.	.	.	5
Utah	.	.	.	.	.	.	1	.	1	.	.	2
Vermont	1	2	2	2	3	2	1	3	2	1	1	20
Virginia	1	.	.	1	.	2	.	.	1	.	.	5
Washington Territory	.	.	.	.	.	.	.	.	.	.	1	1
West Virginia	.	.	.	.	1	.	.	.	.	.	1	2
Wisconsin	2	.	1	1	.	.	1	2	1	2	3	13

The following table exhibits the whole number of students, not graduates of colleges, who became members of the School between 1870–71 and 1887–88, both inclusive, classified according to the states and countries from which they came: —

	1870–71.	1871–72.	1872–73.	1873–74.	1874–75.	1875–76.	1876–77.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	Total.
Alabama	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Arkansas	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1
California	3	1	4	.	2	1	2	2	2	3	1	2	.	1	.	2	1	4	31
Cape Breton Island . .	.	.	.	.	.	.	.	1	.	1	.	1	.	.	.	.	.	.	3
Colorado	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
Connecticut	2	1	1	2	.	.	3	.	1	.	.	1	.	1	1	.	.	1	14
Delaware	.	1	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	3
District of Columbia . .	.	.	1	.	.	.	.	.	.	1	1	.	.	.	1	.	.	1	5
England	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
France	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	2
Georgia	.	.	.	1	.	.	.	.	.	.	1	1	.	.	.	.	.	.	3
Hawaiian Islands . . .	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	2
Illinois	2	1	3	1	2	4	2	.	1	3	1	3	2	1	.	1	2	3	32
Indiana	.	.	.	.	.	.	2	.	.	1	1	1	.	.	.	.	.	.	5
Iowa	.	.	1	3	.	1	1	.	1	1	.	.	.	1	.	.	.	1	10
Japan	.	1	2	.	.	1	1	.	1	.	.	.	.	.	.	.	.	.	6
Kansas	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2
Kentucky	1	.	.	1	.	1	.	.	.	2	.	.	.	.	.	.	1	1	7
Louisiana	.	.	.	1	.	1	.	.	.	1	.	.	.	.	.	.	.	.	3
Maine	2	4	.	3	2	1	3	.	1	1	2	1	2	1	.	.	.	2	25
Maryland	.	1	.	.	.	.	3	.	.	.	.	1	.	.	.	1	.	.	6
Massachusetts	18	15	10	10	17	11	14	7	16	20	7	9	8	11	7	12	13	11	216
Michigan	1	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	1	.	4
Minnesota	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Missouri	2	2	2	.	.	1	1	1	.	3	.	.	1	1	.	.	1	1	16
Nebraska	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
New Brunswick	1	2	1	3	1	2	6	2	2	.	3	3	.	1	.	.	.	1	28
New Hampshire	3	1	.	.	.	1	1	4	.	4	1	1	1	.	1	.	1	5	24
New Jersey	1	.	1	2	.	.	.	.	3	.	.	1	.	.	.	.	.	.	8
New York	6	2	3	1	2	2	4	2	1	2	3	4	3	2	2	1	3	3	46
North Carolina	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
Nova Scotia	1	.	3	.	2	3	1	.	2	.	.	1	1	1	.	.	.	.	15
Ohio	3	1	.	2	3	6	.	2	.	1	3	5	2	1	3	4	3	4	43
Pennsylvania	3	1	2	1	4	3	2	1	4	.	.	1	1	3	1	1	3	3	34
Prince Edward Island .	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	2
Prussia	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
Rhode Island	1	.	1	1	3	1	1	1	.	.	.	.	.	.	.	.	.	1	10
South Carolina	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	2
Tennessee	1	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	1	4
Texas	1	1	1	.	1	2	1	.	.	1	.	1	1	.	.	.	.	.	10
Vermont	.	.	1	1	3	.	1	.	.	.	1	2	2	.	1	1	.	.	13
Virginia	.	.	.	.	.	1	1	1	.	.	1	.	.	.	.	1	.	.	5
West Virginia	.	1	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	2
Wisconsin	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	2	3

The following table exhibits the whole number of students, graduates of colleges other than Harvard, who became members of the School between 1870–71 and 1887–88, both inclusive, classified according to the colleges at which they graduated: —

	1870–71.	1871–72.	1872–73.	1873–74.	1874–75.	1875–76.	1876–77.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	Total.
Acadia College	.	.	.	2	1	.	.	.	.	.	.	1	1	.	.	.	.	.	5
Adelbert College . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
University of Alabama	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1
Allegheny College . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Amherst College . . .	.	.	1	.	.	1	1	3	3	3	1	.	1	1	1	.	4	5	25
Baden Gymnasium . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Bates College	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Beloit College	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Boston College	.	.	.	.	.	.	.	.	1	1	.	1	.	.	1	.	.	.	4
Bowdoin College . . .	1	1	1	.	.	3		1	2	3	1	1	.	2	1	.	1	1	19
Brown University . .	1	6	3	1	.	1	2	1	1	.	2	.	1	.	2	.	2	5	28
Buchtel College . . .	.	.	.	.	.	2	.	.	.	.	4	.	.	.	.	.	.	.	6
University of California	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	.	.	1	3
Central College	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1
Central University . .	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1
Centre College . . .	.	.	.	.	.	1	.	.	1	.	.	.	1	.	1	.	.	.	4
University of Chicago .	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	2
Christian Brothers' Coll.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Christian University .	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Colby University . .	1	.	.	.	.	.	1	.	1	1	.	.	1	.	1	.	1	.	7
University of Colorado	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1
Columbia College . .	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	2
University of Copenhagen	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Cornell College	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1
Cornell University . .	.	1	.	.	1	1	.	.	.	.	.	.	1	1	.	1	.	.	6
Dalhousie College . .	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	2
Dartmouth College . .	4	.	.	3	.	1	.	1	3	.	1	2	.	1	.	.	2	.	18
Delaware College . . .	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	2
De Pauw University . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Dickinson College . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Drake University . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
Earlham College . . .	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
University of Edinburgh	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1
Emory College	.	1	2	.	1	1	.	.	.	1	.	.	.	.	.	.	.	.	6
Emory and Henry College	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Eureka College	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Fisk University	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Georgetown Coll. (D.C.)		1	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	3
Georgetown Coll. (Ky.)	.	.	1	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	2
University of Georgia .	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1
Griswold College . . .	2	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	3
Hamilton College . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1

	1870–71.	1871–72.	1872–73.	1873–74.	1874–75.	1875–76.	1876–77.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	Total.
Hanover College	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2
Haverford College . . .	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1
Hobart College	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	3
Howard University . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
Illinois College	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	2
University of Illinois . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Indiana Asbury Univ. . .	2	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Johns Hopkins University	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Kansas Normal College .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Kentucky Military Inst. .	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1
Kentucky University . .	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2
Kenyon College	2	.	1	1	1	.	.	2	.	.	.	.	.	.	.	.	.	.	7
Kings College (N. S.) . .	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	.	.	.	2
Knox College	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	2
Lafayette College	.	.	1	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	3
Lehigh University . . .	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
University of Leipzig . .	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
University at Lewisburg .	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Lincoln University (Ill.)	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1
Lincoln University (Pa.)	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
University of Louisville .	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
McKendree College . . .	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Maryland Agricultural College	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Massachusetts Agricultural College	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	1	3
Massachusetts Institute of Technology	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1
Mercer University . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
Miami University	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
University of Michigan .	.	.	1	1	.	.	2	1	.	.	.	1	.	3	1	1	1	.	12
Middlebury College . . .	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1
Agric. and Mechan. Coll. of Mississippi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
University of Mississippi	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1
Monmouth College . . .	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
Mt. St. Mary's College .	.	.	.	1	.	1	1	.	.	.	.	.	.	.	.	1	2	.	6
Mt. Union College . . .	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1
National Normal Univ. .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
Univ. of New Brunswick .	2	.	1	.	.	2	.	.	.	.	2	.	.	.	.	.	.	2	9
Coll. of City of New York	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1
Northwestern Christian University	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Notre Dame Univ. (Ind.)	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	2
Oberlin College	.	.	.	.	.	.	.	1	2	1	.	.	1	.	1	3	2	2	13
Oglethorpe University .	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1

	1870–71.	1871–72.	1872–73.	1873–74.	1874–75.	1875–76.	1876–77.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	Total.
Ohio Wesleyan University	1	1	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	4
Olivet College	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1
University of the Pacific	.	1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	2
Pacific Methodist College	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	2
Pennsylvania College . .	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Pennsylvania Military Academy	.	.	.	.	2	.	.	1	.	.	.	.	.	.	.	.	.	.	3
Princeton College . . .	2	3	1	.	.	2	2	2	.	.	.	.	.	.	.	1	.	.	13
Racine College	.	.	.	.	1	.	.	2	.	.	.	.	.	.	1	.	.	.	4
University of Rochester .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Rutgers College	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1
St. John's College (Cambridge, Eng.)	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
St. John's College (Md.)	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1
St. John's College (Fordham, N. Y.)	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1
St. Lawrence University	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
St. Louis University . .	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
St. Xavier College (O.) .	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	2
Santa Clara College . . .	.	1	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	3
Sheffield Scientific School	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	2
Trinity College	.	1	.	.	.	.	.	.	.	.	1	1	1	1	.	.	1	1	7
Tufts College	1	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	5
Union College	1	1	.	.	.	.	.	.	1	.	.	.	.	1	1	.	1	.	6
U. S. Military Academy .	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1
U. S. Naval Academy . .	.	.	1	1	.	.	.	.	.	.	.	1	1	.	.	.	.	.	4
University of Vermont .	.	.	.	.	1	.	.	.	.	2	1	.	.	.	.	.	.	.	4
University of Virginia . .	1	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	4
Victoria University . . .	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Wabash College	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	2
Washington Univ. (Mo.)	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Washington and Jefferson College	2	.	.	.	.	.	2	.	1	.	.	.	.	.	1	.	.	.	6
Wesleyan University (Ct.)	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	1	6
Wesleyan University (Ia.)	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	2
Wesleyan Univ. (N. S.)	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1
Western Reserve College	.	.	.	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	3
Western University of Pa.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	.	.	.	2
Westminster College . .	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	2
Williams College	3	2	.	4	.	.	1	4	.	.	.	2	.	.	.	1	1	.	18
Wisconsin University . .	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Wittenberg College . . .	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1
Wofford College	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	2
Worcester Free Institute	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1
Yale University	4	2	2	4	2	3	.	2	3	.	3	6	.	1	2	5	5	3	47

The following table exhibits the absolute and relative number of students furnished to the Law School by each class graduated at Harvard College during a period of fifty years, namely, from 1835 to 1884 both inclusive. The denominator shows the size of the College class, while the numerator shows how many of the class afterwards became members of the Law School: —

1835.	1836.	1837.	1838.	1839.	1840.	1841.	1842.	1843.	1844.
$\frac{11}{57}$	$\frac{9}{39}$	$\frac{9}{47}$	$\frac{15}{68}$	$\frac{18}{62}$	$\frac{16}{45}$	$\frac{15}{46}$	$\frac{19}{56}$	$\frac{22}{70}$	$\frac{28}{61}$
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.
$\frac{20}{61}$	$\frac{23}{66}$	$\frac{17}{62}$	$\frac{7}{62}$	$\frac{22}{78}$	$\frac{21}{66}$	$\frac{23}{64}$	$\frac{30}{88}$	$\frac{23}{89}$	$\frac{24}{91}$
1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.
$\frac{17}{82}$	$\frac{23}{92}$	$\frac{22}{67}$	$\frac{21}{91}$	$\frac{23}{92}$	$\frac{20}{110}$	$\frac{11}{81}$	$\frac{13}{97}$	$\frac{17}{120}$	$\frac{29}{99}$
1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.
$\frac{23}{84}$	$\frac{15}{108}$	$\frac{29}{95}$	$\frac{18}{78}$	$\frac{24}{109}$	$\frac{23}{129}$	$\frac{30}{157}$	$\frac{21}{112}$	$\frac{25}{131}$	$\frac{30}{164}$
1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
$\frac{36}{141}$	$\frac{42}{139}$	$\frac{45}{180}$	$\frac{33}{150}$	$\frac{49}{192}$	$\frac{35}{166}$	$\frac{23}{190}$	$\frac{35}{183}$	$\frac{43}{205}$	$\frac{39}{197}$

The following table exhibits the contents of the foregoing table grouped into periods of five years each, and with the vulgar fractions converted into decimals: —

1835–39.	1840–44.	1845–49.	1850–54.	1855–59.
$\frac{62}{273} = .227$	$\frac{100}{278} = .359$	$\frac{89}{329} = .270$	$\frac{121}{398} = .304$	$\frac{106}{424} = .250$
1860–64.	1865–69.	1870–74.	1875–79.	1880–84.
$\frac{90}{507} = .177$	$\frac{109}{474} = .229$	$\frac{129}{693} = .186$	$\frac{205}{802} = .255$	$\frac{175}{941} = .185$

The students in the Law School may be conveniently divided into three classes; the first, consisting of those who are graduates of Harvard College; the second, of those who are graduates of colleges other than Harvard; and the third, of those who are not graduates of any college. In respect to the number of students, belonging to each of these three classes, who enter the School from year to year, the first class alone seems to be governed by any law which it is easy to discover. Students belonging to the second and third classes are, in respect to their sources of supply, so widely scattered in proportion to their numbers, that nothing short of a long series of years will show with any certainty whether the supply is increasing or diminishing. Thus, the students of the third class who have entered the School during the last eighteen (18) years have come from forty-four different States or countries, while no one State or country, except Massachusetts, has furnished an average of three in each year, and only two besides Massachusetts (namely, New York and Ohio) have furnished an average of two in each year. Massachusetts has furnished an average of twelve in each year, but the number furnished by her in different years has ranged from seven to twenty. Nor does it seem possible to account for the differing numbers in different years, if we consider only single years. We find, indeed, that in 1877–78 (being the year in which the three-years' course and the examination for admission went into operation) the number dropped for the first time to seven; but then it increased to sixteen in 1878–79, and to twenty in 1879–80, that being a larger number by two than entered in any other year. Looking further, however, we find that the number again dropped to seven in 1880–81, to nine in 1881–82, to eight in 1882–83, and to seven in 1884–85, while the smallest number in any year previous to 1877–78, was ten; and if we take the average for the seven years preceding 1877–78, and for the eleven years following, we find that it was $13\frac{4}{7}$ in the former period, and 11 in the latter. Upon the whole, therefore, all that we can say by way of generalization is, that the number of students of the third class, coming from Massachusetts, has diminished, though not in a very marked degree, since the establishment of the three-years' course and the examination for admission.

Adverting to the aggregate number of students of the third class — the non-graduates — who entered the School in each year during the same period of eighteen years, we find that it ranged from twenty-two to fifty-two; and, if we consider only single years, we find the same difficulty in accounting for the differing numbers in different years that we do in the case of Massachusetts. To be sure, the number dropped in 1877–78 from fifty-one in 1876–77, and from fifty-two in 1875–76, to thirty-two; but then it rose to forty in 1878–79, to forty-eight in 1879–80, to forty-four in 1881–82, and to fifty-two in 1887–88. On the other hand, the smallest number in any year prior to 1877–78 was thirty-six, while it fell below that number in seven out of the eleven following years; and if we take the average of the seven years preceding 1877–78, and of the eleven following years, we find that it was forty-four during the former period, and only $34\frac{9}{11}$ during the latter period. Again, if we divide the period of eleven years into two periods of six and five years respectively, we find that the average number during the first period of six years was $37\frac{1}{6}$, while it was only 32 during the last period of five years; and that too in spite of the large number of fifty-two in the last of the five years, i. e., in the year now under review. These figures, therefore, seem to show that the number of students of the third class entering the School has been gradually diminishing ever since the establishment of the three-years' course and the examination for admission. Does the large number who entered the School during the year under review show that that process has been arrested? In view of the experience of the now current year, it would seem that that question must be answered in the negative; for the number of students of the third class who have entered the School during the current year is only twenty-eight, while, at the corresponding date in the year under review, the number was forty-four.

The students of the second class who have entered the School during the last eighteen years have come from no less than 124 different colleges, no one of which has sent an average of three in each year, and only one of which (Yale) has sent an average of two in each year. The whole number of students of this class who entered the School during the seven years preceding 1877–78 averaged $28\frac{2}{7}$ in each year; during the next six years it averaged 23 in each year; and during the last five years it has averaged $25\frac{1}{2}$ in each year. It seems pretty clear, therefore, that the number of students coming to the School from other colleges has diminished since the establishment of the three-years' course; but it also seems probable that the lowest point has been reached, and that now an improvement is going on. The number of such students who entered the School during the year under review (30) was, however, less by four than in the preceding year (34), while the number who have thus far entered during the current year (26) is less by four than the number who had entered at the corresponding date in the year under review (30).

It is only in students of the first class, namely, graduates of Harvard College, that the School has had any growth during the last eighteen years in respect to the number of students who have entered it. In that class the growth has undoubtedly been great, but yet not greater than the growth of the classes in Harvard College. Indeed, if we take fifty successive college classes, beginning with the class of 1835, and ending with that of 1884, and divide them into ten groups of five classes each, in the order of time, we find that the second group contributed to the Law School the largest proportion of its whole number, while the sixth group contributed the smallest proportion, the tenth group the second smallest, and the eighth group the third smallest, though the difference between the eighth and tenth groups is merely nominal, and the difference between them and the sixth group is small. The explanation of these phenomena is easy: the second group comprises the last five years of Judge Story's life; the sixth group comprises the period of the late war; the tenth group comprises the period of the greatest depression caused by the establishment of the three-years' course; and the eighth group comprises the period during which examinations for a degree were established, and during which the longest period of residence required for a degree was extended from one and a half years to two years.

It has not been found practicable to apply the foregoing test to the College classes since 1884, as it is not certain that any of them have yet made their full contribution to the Law School, and the later ones certainly have not.

The years 1886–87 and 1887–88 have been distinguished for a large increase in the total number of students entering the School, the number having risen from 88 in 1885–86 to 113 in 1886–87 (an increase of 25), and to 134 in 1887–88 (an increase of 21). The increase in 1886–87 was in all the three classes of students; but the increase in 1887–88 was almost wholly in the third class, namely, non-graduates. The number of Harvard graduates was indeed greater by 6, but the number of graduates of other colleges was less by 4, so that the increase in the first and second classes, taken together, was only 2, while the increase in the third class was 19. In the now current year the total number of new entries is less by 21 than at the corresponding date of 1887–88; but the decrease is mostly in students of the third class, the number of Harvard graduates (49) being less by 1 only than at the corresponding date of 1887–88 (50), and the number of graduates of other colleges (26) being less by 4 only than at the corresponding date in 1887–88 (30), while the number of non-graduates (28) is less by 16 than at the corresponding date in 1887–88 (44). The experience of the last eighteen years leads to the inference that it is the "44" rather than the "28" that is abnormal.

The greatest as well as the most important growth that the School has had during the last eighteen years is undoubtedly to be found, not in the number of students who have entered the School, but in the length of time that students have remained in it; and in this latter particular the current year is not disappointing; for the falling off in new entries is more than made up by an increased number of old students, the total number appearing in the annual Catalogue for 1887–88 being 215, while the total number to appear in the annual Catalogue for the current year will be 217. It is true that the annual Catalogue for the current year will show a third-year class of only 27, while the annual Catalogue of 1887–88 showed a third-year class of 30; but this apparent falling off in third-year men is more than accounted for by the fact that an unusually large number of the second-year class of last year failed to gain admission to the third-year class of the present year. If the number of such failures had been no greater than in the preceding year, even taking into account only those second-year men who actually returned to the School in each of the two years for a third year, the present third-year class would number 33 instead of 27; and this fact accounts, in part at least, for the large number of special students who will appear in the annual Catalogue for the current year.

C. C. LANGDELL, *Dean*.

DECEMBER 13, 1888.

THE MEDICAL SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — As Dean of the Medical Faculty I have the honor to submit the following report upon the Medical School for the academic year 1887–88: —

The improvement of the course of study has been a subject of grave consideration by the Faculty. The establishment of a compulsory four-years' graded course has been formally recognized as desirable as soon as a proper financial basis can be assured. What this basis should be, or, in other words, what loss the School would be likely to incur from making the change, is a question about which considerable difference of opinion prevails. A committee charged with the consideration of the subject, reported that in their judgment a subscription income of $20,000 a year for five years would justify the establishment of such a course. As it was evidently impossible to obtain a sufficient guarantee fund, the action of the Faculty was limited to making certain changes in the course of instruction, which are fully set forth in the following circular: —

HARVARD UNIVERSITY. — MEDICAL SCHOOL.

CHANGES IN THE COURSE OF STUDY.

(*To go into effect September, 1888.*)

FIRST YEAR.

Medical Chemistry will be taught during the second half of the year.

SECOND YEAR.

Medical Chemistry will be taught in the first half of the year. The examination will be held in February.

Therapeutics will be taught during the year, with an examination at the end of the year.

THIRD YEAR.

In addition to the examinations hitherto required for the degree, each candidate will be required to take examinations, aggregating two (2) hours from the followihg list of elective studies, to be chosen at the commencement of the year; the choice thus made is to be final. One two-hour course or two one-hour courses are to be taken, as follows: —

Ophthalmology (1 hr.).
Otology (1 hr.).
Dermatology (2 hrs.).
Diseases of Nervous System (2 hrs.).
Diseases of Children (2 hrs.).
Mental Diseases (1 hr.).
Gynaecology (2 hrs.).
Legal Medicine (1 hr.).

FOURTH YEAR.

The course of study will be entirely elective and each student can attend any or all of the courses.

To obtain the fourth-year degree each candidate must pass examinations amounting to ten (10) hours, chosen from the following list of studies, the choice to be made at the commencement of the year and to be regarded as final: —

Opthalmology (2 hrs.).
Dermatology (2 hrs.).
Otology (2 hrs.).
Laryngology (1 hr.).
Gynaecology (2 hrs.).
Diseases of Children (2 hrs.).
Diseases of Nervous System (2 hrs.).
Mental Diseases (1 hr.).
Clinical Obstetrics (2 hrs.).
Operative Obstetrics (1 hr.).
Operative Surgery (1 hr.).
Legal Medicine (1 hr.).
Hygiene (1 hr.).
Bacteriology (1 hr.).

The above are entirely distinct from the third-year courses of the same title, and in addition there will be given clinical and laboratory courses in Orthopaedic Surgery, Genito-urinary Diseases, Syphilis, Ovarian Tumors, Clinical Microscopy, Preparation of Food for Infants and Invalids; in these courses no examination is required.

House-officers in the Massachusetts General Hospital, Boston City Hospital, Carney Hospital, McLean Asylum, Massachusetts Charitable Eye and Ear Infirmary, Boston Children's Hospital, and Free Hospital for Women may obtain the fourth-year degree by entering the fourth class, passing an examination in the electives amounting to five (5) hours, and presenting a certificate of satisfactory performance of duty in the Hospital for a period equivalent to the School year, and an acceptable thesis or clinical report based upon observations made during their service. On account of the shorter services in the Lying-In Hospital and Adams Nervine Asylum, internes of these institutions will be required to pass an aggregate of seven (7) hours examination and present a certificate and thesis as above.

Medical students who desire to devote their fourth year of study mainly to advanced work in any of the laboratories of the School, may obtain the fourth-year degree upon passing examinations in the elective studies aggregating five (5) hours, and presenting an acceptable thesis based on the laboratory work actually done.

FOURTH-YEAR FEES.

1. The fee for the full year to all students who have paid for three full courses in the School shall be one hundred dollars.

2. For other students, including graduates of other schools, the fee shall be two hundred dollars.

3. For House-officers in Hospitals, who are entitled to apply for the degree, the fee shall be thirty dollars for the entire year.

4. For students engaged in special advanced work in the laboratories the fee shall be one hundred dollars.

BOSTON, June 30, 1888.

It will be observed that the important features in the amended scheme of instruction are the introduction of the elective system into the medical curriculum and the recognition of hospital and laboratory work as means of obtaining the fourth-year degree. It is hoped that these changes will render the course of instruction much more valuable and attractive, and thus facilitate the establishment of a compulsory four-years' course.

The amount and character of the instruction given in the School during the past year is shown below in Table I. Special work, not thus set forth, has also been done in various departments and may be summarized as follows: —

Anatomy. — Dr. W. S. Bryant has studied the valves of the intestinal veins, and has demonstrated their existence in the veins of the human foetus and their occasional persistence in the adult (Boston Med. and Surg. Journal, Oct. 25, 1888). The construction by Dr. John C. Munro of a large model of the arm cut into slices and painted from actual frozen sections has greatly facilitated the teaching in this department. Living models in conjunction with frozen sections have also been much used for purposes of instruction.

Histology. — In the histological laboratory Dr. J. T. Bowen has investigated the development of the human epitrichium; Dr. C. S. Minot has completed a memoir, now in press, upon the development of the foetal appendages of the mammalia, with special reference to the human placenta. The designing and perfecting of an automatic microtome upon new principles has been part of the work of the year; the instrument has proved a valuable means of economizing labor and time, and gives more perfect sections than the hand microtomes.

Physiology. — The Professor of Physiology and Dr. J. W. Warren have studied the reënforcement of the knee-jerk by muscular contractions. Dr. Bowditch made a preliminary report on the subject to the National Academy of Sciences, April 17, 1888 (Boston Med. and Surg. Journal, May 31, 1888), and Dr. Warren presented the results of further investigation to the American Physiological Society, Sept. 20, 1888. Dr. F. H. Hooper has continued his work upon the innervation of the larynx and has published his results in a paper entitled "Effects of varying Rates of Stimulation on the action of the recurrent laryngial nerves" (N. Y. Med. Journal, Nov. 3, 1888). Dr. Lovett's work on the distribution of strychnia in the animal body, mentioned in last report, has been completed and published (Journal of Physiology, Vol. IX. p. 99).

Chemistry. — Assistant Professor Hills has been occupied during the past year in investigating the question of the postmortem imbibition of poisons, particularly arsenic, mercury, and zinc.

Materia Medica and Therapeutics. — Dr. E. G. Brackett, Assistant in this department, has made an investigation for the State Board of Health on the healthfulness of oleomargarine as an article of food. The lecture-room instruction has been supplemented by clinical exercises at the City Hospital, in which the class is divided into small sections and each student is required to give an outline of the use, in the case under consideration, of such remedies as seem to him to be indicated. The well-recognized advantages of the "conference" system of instruction are thus extended to this department.

Hygiene. — Dr. Charles Harrington has conducted an investigation into the sanitary condition of the Public Schools of Boston. Dr. Charles P. Worcester has begun a research upon the effects of iron compounds on the blood in a state of health. The instruction in this department has been illustrated by visits in company with Dr. S. H. Durgin to the Small-pox Hospital, the pumping station of the Sewer Department, the rendering and fertilizer manufacturing establishments at Spectacle Island and at Brighton, the Quarantine Station, the Brighton Abattoir, the New England Vaccine Lymph establishment, &c.

Bacteriology. — Dr. J. A. Jeffries has continued his original investigations, the results of which are embodied in the following papers: "On the Sterilization of Milk for Infants" (Am. Jour. of Med. Sciences, May, 1888); "The Bacteria of the Alimentary Canal, especially in the Diarrhoeas of Infancy" (Boston Med. and Surg. Journal, Sept. 6, 1888). Dr. Austin Peters has, with the advice of the demonstrator and under the patronage of the Massachusetts Society for the Promotion of Agriculture, been conducting experiments with a view of determining how far a cow may be tuberculous before the milk supply becomes dangerous as an article of food. The actual experiments upon animals are conducted at a farm in the country, and the bacteriological work is done in the laboratory of the School.

Surgery. — Dr. G. H. Monks gave a voluntary course of twelve hours to the members of the third class on the Demonstration of Surgical Landmarks and Surface Markings on the living model as a preliminary to Dr. Porter's course on Operative Surgery.

Ophthalmology. — In addition to the regular work of this department, the Professor of Ophthalmology has devoted half an hour a week to giving personal assistance to individual students in the use of the ophthalmoscope.

Children's Diseases. — During the past year Assistant Professor Rotch has made a careful study of infant feeding, based largely on recent discoveries in bacteriology. The chemical and physiological work done in the laboratories of the School has been supplemented by anatomical observations of children. The results of this work will shortly appear in the "Cyclopedia for Diseases of Children."

Gynaecology. — In this department Dr. Davenport has spent considerable time with students in the examination of cases to be reported at the gynaecological clinical conferences. Students have also had opportunities at the Free Hospital for Women for observation and instruction considerably in excess of that mentioned in the published tables.

The whole number of students in attendance

During the year was	275
During the first term	264
During the second term	257

Of these 135 had literary or scientific degrees.

There were 76 applicants for the degree of Doctor of Medicine in the three years' course, of whom 12 were rejected.

There were 11 applicants for the degree of Doctor of Medicine in the four years' course, of whom 1 was rejected. Of the 10 students who received the degree, 2 received it *cum laude*.

The fourth class was composed of 10 students.

The scholarships were awarded as follows: —

1st Barringer	Scholarship,	G. A. Craigin	3d Class.
2d "	"	F. A. Stewart	3d "
Faculty	"	A. H. Wentworth	3d "
"	"	S. A. Mahoney	3d "
"	"	J. H. Huddleston	2d "
"	"	G. W. Kaan	2d "
Foster Gratuity,		E. R. Moras	3d "
" "		A. C. Stanard	3d "

The usual statistics of the School will be found in the following tables.

H. P. BOWDITCH, *Dean.*

TABLE I.—SHOWING THE AMOUNT AND CHARACTER OF INSTRUCTION.

COURSES OF INSTRUCTION FOR 1887–88.

Instructors.	Subjects.	Exercises per week.	No. of students examined.
	FIRST CLASS.		
Prof. Dwight	Descriptive Anatomy	Four.	78
Asst. Prof. M. H. Richardson	Practical and Applied Anatomy	Five.	
Drs. Mixter, Newell, & Conant	Practical Anatomy, with Exercises in Dissection	Five, January till May.	
Asst. Prof. C. S. Minot and Dr. Quincy	Laboratory Exercises in Histology	Two, till May.	
Asst. Prof. C. S. Minot	Embryology	Twenty Lectures.	
Prof. Bowditch	Systematic and Experimental Physiology	Four.	89
Dr. J. W. Warren	Laboratory Exercises in Experimental Physiology	Novemer till May.	
Asst. Prof. Hills	General and Analytical Chemistry	Two, with ten additional Exercises	61
Asst. Prof. Hills, Drs. Emerson and Harrington	Practical Exercises in the Laboratory for General Chemistry	Six.	
Dr. Harrington	Hygiene	Twelve Lectures and twelve Demonstrations.	
Asst. Prof. F. H. Williams	Materia Medica with Practical Demonstrations	Two, second half-year.	74
	SECOND CLASS.		
Prof. Dwight	Topographical and Advanced Anatomy	One.	74
Asst. Prof. M. H. Richardson	Practical and Applied Anatomy	Five.	
Drs. Mixter, Newell, & Conant	Practical Anatomy, with Exercises in Dissection	Five, till May.	
Prof. Wood	Medical and Toxicological Chemistry	Two.	69
Prof. Wood, and Drs. Emerson and Harrington	Practical Exercises in Laboratory for Medical Chemistry	Six.	
Prof. Fitz	General Pathology and Pathological Anatomy	Two.	68
Prof. Fitz	Special Pathological Anatomy, with Demonstrations	Two.	

	SECOND CLASS — CONTINUED.		
Drs. Whitney and Gannett	Laboratory Exercises in Pathological Histology	Two.	
Prof. Fitz and Dr. Gannett	Practical Instruction in Performing Autopsies	Throughout the year.	
Asst. Prof. Whittier, Drs. G. B. Shattuck, Garland, and Vickery	Clinical Medicine, including one weekly conference	Four.	
Drs. Cutler, Garland, and Gannett	Practical Instruction in Auscultation and Percussion	Six, first half-year.	
Dr. F. C. Shattuck	Recitations in Theory and Practice	Two.	
Asst. Prof. Knight	Practical Diagnosis and Treatment of Diseases of the Larynx	Six, first half-year.	
Prof. Warren	Recitations in Surgical Pathology and Surgery	One.	
Dr. Burrell	The Application of Bandages and Apparatus	One, October till January.	
Profs. Cheever, Porter, and Warren	Clinical Surgery	Two.	
Prof. Porter	Clinical Surgery	One.	
	THIRD CLASS.		
Asst. Prof. F. H. Williams	Therapeutics	Three.	66
Prof. W. L. Richardson	Theory and Practice of Obstetrics	Three.	70
Dr. C. M. Green	Recitations in the Theory and Practice of Obstetrics	One.	
Prof. W. L. Richardson	Operative Obstetrics	Twelve practical Exercises.	
Prof. W. L. Richardson and Dr. C. M. Green	Practical Instruction in Clinical Obstetrics	Throughout the year.	
Prof. Minot	Theory and Practice of Physic	Five.	64
Asst. Prof. Whittier, Drs. G. B. Shattuck, Garland, and Vickery	Clinical Medicine, including one weekly conference	Four.	73
Prof. Cheever]	Surgery	One.	63
Prof. Warren	Surgical Pathology	One, October till January.	

COURSES OF INSTRUCTION FOR 1887–88 — CONTINUED.

THIRD CLASS — CONTINUED.

Profs. Cheever, Porter, and Warren	Clinical Surgery	Two.	66
Prof. Porter	Surgical Anatomy and Operative Surgery	Twice a week in March and April.	
Prof. Porter Asst. Prof. M. H. Richardson and Dr. Mixter	Operative Surgery	Fifteen practical Exercises.	
Prof. Williams	Diseases of the Eye	Two, first half-year.	
Prof. Williams	Clinical Ophthalmology	One, till January and after March.	
Prof. White	Diseases of the Skin	One.	
Prof. White	Clinical Dermatology	One.	
Asst. Prof. Baker	Gynaecology	Two.	
Asst. Prof. Baker	Clinical Gynaecology	Two, first half-year.	
Dr. Davenport	Clinical Gynaecology	Two, first half-year.	
Dr. Greenough	Practical Diagnosis and Treatment of Syphilis	One.	
Dr. J. O. Green	Practical Diagnosis and Treatment of Diseases of the Ear	One, January till April.	
Dr. Blake	Anatomy, Physiology, and Diseases of the Ear	Two, for three months.	
Dr. Rotch	Practical Diagnosis and Treatment of Diseases of Children	One.	
Dr. Putnam	Practical Diagnosis and Treatment of Diseases of the Nervous System	One.	
Dr. Folsom	Mental Diseases	One, second half-year.	
Asst. Prof. Draper	Legal Medicine, with Demonstrations	Twelve Exercises.	

FOURTH CLASS.

Dr. G. B. Shattuck	Clinical Medicine	One.	
Dr. Garland	Clinical Medicine	One.	
Asst. Prof. Whittier, Drs. Gannett, Cutler, and F. C. Shattuck	Clinical Medicine	One, for one month.	

FOURTH CLASS — CONTINUED.

Prof. Warren	Clinical Surgery	One, till February.	
Prof. Porter	Clinical Surgery	One, after January.	
Prof. Porter and Dr. Monks	Operative Surgery	Practical Exercises.	
Dr. Bradford	Orthopedic Surgery	Two, three months.	
Prof. W. L. Richardson	Clinical Obstetrics	Two, for six months.	
	Operative Obstetrics	Practical Exercises.	
Prof. Williams	Clinical Ophthalmoscopy	Two, for six months.	4
Dr. Wadsworth	Ophthalmoscopy	One, for four months.	
Prof. White	Dermatology	One.	5
Prof. White	Clinical Dermatology	Three, for four months.	
Asst. Prof. Baker and Dr. Davenport	Clinical Gynaecology	Two.	6
	Operative Gynaecology	Ten exercises.	
Dr. Rotch	Diseases of Children	Two, for four months.	
Dr. Putnam	Diseases of the Nervous System	Three, for three months.	
Dr. Folsom	Mental Diseases	One.	5
Asst. Prof. Knight	Laryngology	Three, for three months.	4
Dr. Blake	Otology	Two, for three months.	4
Dr. J. O. Green	Otology	Two, for three months.	
Asst. Prof. Draper	Legal Medicine	One.	3
Dr. Harris	Legal Medicine	Demonstrations.	
Dr. Greenough	Syphilis	One.	
Dr. Homans	Ovarian Tumors	Six Lectures; Clinical Exercises.	
Dr. Durgin	Hygiene	Twelve Lectures.	
Prof. Fitz	Clinical Microscopy	One, for three months.	
Dr. Cabot	Genito-urinary Surgery	One, for three months.	
Dr. Ernst	Bacteriology	One, for three months.	
Boston Cooking School	Cookery		

TABLE II.—JUNE EXAMINATIONS.

		FIRST CLASS AND SECOND CLASS.														THIRD CLASS.											
		Anatomy.		Physiology.		General Chemistry.		Medical Chemistry.		Materia Medica.		Path. Anatomy.		Adv. Anatomy.		Theory and Practice.		Clinical Medicine.		Surgery.		Clinical Surgery.		Therapeutics.		Obstetrics.	
			%		%		%		%		%		%		%		%		%		%		%		%		%
1885	Passed	69		75		51		62		125		63		59		52		59		58		62		33		52	
	Rejected	23	25	14	18	12	19	7	10	24	16	6	8	11	15	9	14	1	1	5	8	0	0	15	6	6	10
	Total	92		89		63		69		149		69		70		61		60		63		62		48		58	
1886	Passed	50		56		55		75		75		73		68		58		63		64		68		60		65	
	Rejected	27	35	19	25	10	15	11	13	15	16	9	11	20	20	8	12	1	1	7	10	0	0	7	10	6	8
	Total	77		75		65		86		90		82		88		66		64		71		68		67		71	
1887	Passed	66		63		49		69		66		67		67		69		74		79		79		73		78	
	Rejected	21	24	22	26	14	22	9	11	21	24	9	11	9	11	12	15	12	14	5	6	2	2	6	8	5	6
	Total	87		85		63		78		87		76		76		81		86		84		81		79		83	
1888	Passed	53		67		46		52		53		57		64		53		64		57		61		58		60	
	Rejected	7	11	10	13	9	16	9	14	15	22	4	6	3	4	7	11	2	3	2	3	0	0	5	8	6	9
	Total	60		77		55		61		68		61		67		60		66		59		61		63		66	

FOURTH CLASS.

		Ophthalmology.		Dermatology.		Gynaecology.		Clinical and Operative Obstetrics.		Diseases of Children.		Diseases of Nervous System.		Mental Diseases.		Legal Medicine.		Otology.		Laryngology.		Syphilis.		Operative Surgery.	
1885	Passed	7		6		6		6		8		2		5		8		8		8		8		5	
	Rejected	0	0	0	0	1	16	3	33	0	0	4	66	1	2	0	0	0	0	0	0	0	0	3	37
	Total	7		6		7		9		8		6		6		8		8		8		8		8	
1886	Passed	10		11		10		7		10		10		10		8		11		11		11		12	
	Rejected	0	0	1	8	0	0	5	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
	Total	10		12		10		12		10		10		10		8		11		11		11		13	
1887	Passed	12		12		8		9		11		11		8		11		9		11		10		9	
	Rejected	4	25	0	0	5	38	5	35	0	0	1	8	6	42	0	0	1	10	0	0	0	0	2	18
	Total	16		12		13		14		11		12		14		11		10		11		10		11	
1888	Passed	2		3		3		0		0		0		3		2		2		3		0		0	
	Rejected	1	33	0	0	0	0	0	0	0	0	0	0	0	0	1	33	1	33	0	0	0	0	0	0
	Total	3		3		3		0		0		0		3		3		3		3		0		0	

TABLE III. — SHOWING NUMBER OF TERMS SPENT AT THE SCHOOL BY GRADUATES.

	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Spent six terms .	62 88%	39 86%	49 81%	79 91%	67 88%	57 96%	63 80%	72 91%	83 85%	77 88%
Spent five terms .	2 2%	1 2%	6 10%	2 2%	4 5%	0	3 4%	3 4%	4 4%	4 4%
Spent four terms .	3 4%	4 8%	4 6%	4 4%	4 5%	2 3%	4 5%	4 5%	1 1%	3 3%
Spent three terms .	2 2%	0	1 1%	0	1 1%	0	0	0	0	0
Spent two terms .	1 1%	1 2%	0	1 1%	0	0	1 1%	0	1 1%	3 3%
Total graduated .	70	45	60	86[1]	76[2]	59[3]	73[4]	79[5]	98[6]	87[7]

[1] Includes nine students of the fourth class.

[2] Includes six students of the fourth class.

[3] Includes nine students of the fourth class.

[4] Includes three students of the fourth class.

[5] Includes nine students of the fourth class.

[6] Includes eleven students of the fourth class.

[7] Includes eleven students of the fourth class.

TABLE IV. — STATISTICS OF EXAMINATIONS.

EXAMINATIONS FOR ADMISSION.

			Physics.	Latin.	English.	Elective.	Rejected.
1888.	June	Offered . .	34	34	34	34	3
		Conditioned	5	9	7	4	
	Sept.	Offered . .	29	29	29	29	4
		Conditioned	8	5	5	4	

THE DENTAL SCHOOL.

To the President of the University:

Sir, — As Dean of the Dental Faculty I have the honor to submit the following report upon the Dental School for the year 1887–88: —

The number of students was thirty-three, divided as follows: First year *Six*, second year *Sixteen*, third year *Eleven*.

The subjects and methods of instruction have been the same as in previous years, viz. Lectures on Anatomy with dissections; Physiology with practical instruction in the Laboratory; General Chemistry with abundant work in the Laboratory; Lectures on Surgery and

Surgical Pathology, illustrated by colored drawings and by recent and morbid specimens. The students have also the privilege of attending the operations at the Massachusetts General and City Hospitals, a privilege of which many have availed themselves. This instruction has been given by the Professors of the Medical School in connection with the classes in that School. By the Dental Professors and Instructors, instruction has been given in Dental Therapeutics and Materia Medica, Oral Anatomy and Pathology, Orthodontia, or the Regulating of Teeth, Operative and Mechanical Dentistry, and the Mechanical Treatment of Cleft Palates.

The amount of instruction in strictly dental subjects has been:

Instructors.	Subjects.	Number of Exercises.
Prof. Fillebrown	Operative Dentistry	35 lectures
" Brackett	Dental Therapeutics	35 "
" Chandler	Mechanical Dentistry	25 "
Instructor Briggs	Materia Medica	25 " illustrated by specimens
" Monks	Surgical Pathology	12 "
" Stanton	Oral Anatomy and Pathology	30 " illustrated by drawings and microscope
" Wilson	Orthodontia	8 " and 25 clinics
" Grant	Cleft Palate and Fractures of the Jaw	10 " illustrated by models and appliances.

The Professors of Operative and Mechanical Dentistry have also devoted one or more hours, as seemed necessary, of each week to clinical instruction.

Examinations have been held in all these subjects, with the usual percentages of successes and failures. The subject of Materia Medica is included in the examination in Dental Therapeutics, of Orthodontia in Operative and that of Cleft Palate in Mechanical Dentistry.

The students of the first year get no dentistry, but are in the Medical School under the instruction of its Professors of Anatomy, Physiology and Chemistry. In the second and third year, in addition to theoretical studies they get instruction in practical dentistry in the infirmaries of the Operative and Mechanical departments under the supervision of competent instructors, performing all its operations.

An ample supply of patients for these purposes is found in that numerous class of persons in the community who are willing to trust themselves in the hands of students, because the prices charged for their work are only nominal. This trust, moreover, is not misplaced; for every operation goes on under the critical eye of an instructor who is a skilful operator.

Dr. E. L. Shattuck was appointed Demonstrator of Operative Dentistry, and performed its duties in an entirely satisfactory manner. At the beginning of the year, however, he was absent on account of illness for nearly two months, during which period his place was supplied by Dr. F. E. Sprague of the class of '87, whose excellent ability and diligence kept up the quality of the instruction and the interest of the students. Dr. Shattuck at the end of the year declined a renomination, and Dr. H. M. Clifford of the class of '86 was appointed to the position. Dr Whitten, who had served four years with great acceptance as instructor in Operative Dentistry, felt compelled by pressure of his private business to decline a reappointment, and Dr. W. P. Cooke of the class of '81 was appointed in his stead. The interested and almost gratuitous services of these instructors in Operative Dentistry, all graduates of the School, contribute very largely to its success. Dr. Waitt, who for several years has performed — to the entire satisfaction of the Professor — the duties of Demonstrator of Mechanical Dentistry, also declined a reappointment, and Dr. A. H. Stoddard of the class of '87 was appointed in his place.

I have in former reports called attention to the pecuniary needs of the School and endeavored to enlist in its behalf the interest of the charitable and wealthy of our community, but so far with apparently little success. Such as care to look into the matter I would refer to my last report.

The clinical instructors for the year have been

John T. Codman, D.M.D., of Boston.
Forest G. Eddy, D.M.D., of Providence, R. I.

THOMAS H. CHANDLER, *Dean.*

THE LAWRENCE SCIENTIFIC SCHOOL.

To the President of the University:

Sir, — I respectfully submit the following report of the Lawrence Scientific School for the year 1887–88: —

The whole number of students who were in the School was twenty-one, showing a slight increase over the preceeding year. Of these, six were regular students and fifteen were special students. The regular students took on the average 5⅛ courses of instruction, and the special students $4\frac{9}{10}$ courses. At Commencement, on the recommendation of the Faculty, degrees were granted to four students of the School and to one student of Harvard College who had completed the course in Engineering.

In my last report I mentioned the plans which had been suggested for the future of the School. These plans have been considered during the year, and an attempt has been made to bring about a union between the School and the College; but this attempt has failed, and it now appears probable that the separate existence of the School will be continued indefinitely. The problems of the School are thus reduced to a single one, namely, to arrange in the best way the several four-year programmes which lead to the degree of Bachelor of Science. These programmes are in great measure composed of studies selected from the courses of instruction given in Harvard College, as by so doing duplication of instruction is avoided; and most of the studies in the programmes are "required," thus making the system of the School — in contrast with that of the College — a "group" system. The selection of studies and the arrangement of programmes are found to be somewhat difficult, because under the two systems exemplified in the University, the "group" system and the "elective" system, the requirements of students as to sequence of studies and hours of recitation are different. The Faculty of this School has lately considered the programmes, and has rearranged them so as to more fully meet the needs of students. The new programmes will appear in the catalogue for the current year.

The engineering courses of this School have now been open to College students, under very slight restrictions, for two years. The number who take these courses has steadily increased, until now the College students form the majority in all the classes. It was expected that a fair proportion of these students would remain one year after their graduation from the College, complete the engineering course and receive the degree of the School. This expectation has been justified by the facts thus far; and the prospect now is that the number who obtain an engineering education in this way will be larger still in the future.

In my last report I noticed the demand for courses in scientific French and German. This demand is now even greater than it was at that time. I regret that these courses have not yet been provided.

W. S. CHAPLIN, *Dean*.

Nov. 20th, 1888.

THE BUSSEY INSTITUTION.

To the President of the University:

Sir, — I respectfully submit the following report upon the Bussey Institution for the year 1887–88: —

Instruction was given in Agriculture, Horticulture, Botany, Applied Zoölogy, and Agricultural Chemistry by Messrs. Motley, B. M. Watson, jr., Kidder, Winslow, and Storer.

Seven students were in attendance.

Mr. Hinckley resigned his position as Superintendent of the farm in April, 1888. Mr. M. Swallow was in charge during the summer, and Mr. L. E. Northway succeeded him in September. The receipts from the farm were slightly in excess of the cost of conducting it. As in previous years, horses and cattle were taken to board, and much manure was obtained for maintaining the fertility of the land.

A valuable gift of books relating to Horticulture was received from Mrs. Caroline Dixwell Clements of Jamaica Plain; an interesting collection of specimens of standard grasses, seeds, and grains from Messrs. Sutton and Sons, Seedsmen, of Reading, England, through James S. Russell, Esq., of Milton; a horse from Mr. Joseph S. Lovering of Boston, and agricultural newspapers from Dr. D. D. Slade of Chestnut Hill.

F. H. STORER, *Dean*.

THE VETERINARY SCHOOL.

To the President of the University:

Sir, — I beg to submit herewith the sixth annual report of the School of Veterinary Medicine: —

Of the three students who composed the third class all presented themselves for the final examinations, in which none were successful. There was but one graduate and he was from last year's class.

Of the six members of the second class two were successful in all the subjects and one in all but one; two failed to attain the necessary standard, and one closed his connection with the School.

Of the fifteen students of the first class, one has died; one has closed his connection with the School; one has become a special student; three dropped into the new first class; and nine became members of the second class: of these last, five were successful in all of the subjects.

At the admission examinations nine candidates presented themselves: of these, four have entered the School. One candidate, having the required testimonials, was admitted to the first class without examination. There are also two special students in subjects of the third year.

Thus there are three students in the third class, nine in the second, and eight in the first, which together with the two specials makes a total attendance of twenty-two: four less than last year.

The only change that has been made in the teaching staff during the year was occasioned by the resignation, due to his removal from Boston, of Dr. Charles H. Williams. Dr. Frederick H. Cheney was appointed Instructor in Ophthalmology in his place.

So far the attendance upon the classes remains practically the same from year to year, and by far the greater number of students continues to come from close about us. This I look upon as being to a considerable extent the natural result of the fact that the time of the instructors is so taken up by their class duties, by the patients in the Hospital, and by outside practice, upon which they must largely depend for their own maintenance, that they can do nothing toward extending more widely the influence of the School. If it is desired to have the Institution take rank as a scientific centre, or to have it attractive to students from a distance, means must be taken to overcome this difficulty.

The Veterinary Hospital. — For the twelve months ending October 31, 1888, there have been treated at the Hospital 2486 patients. Of these, 1605 were out-door clinics; 5 were sent to the farm buildings at the Bussey Institution, and 876 were in-door patients at the Village Street buildings. Of these last, 599 were horses, 259 dogs, 3 mules, 1 cow, 13 cats, and a monkey. In addition to these, 1783 horses were shod during the year.

The falling off in the number of dogs is due to the fact that we were forbidden by the City government to keep these animals during the warm months, as they annoyed some of the neighbors.

Museum. Dr. Lee's interest in this division of his subject has added still further to both the anatomical and pathological collections and so to our resources for illustrating lectures.

Money could be very usefully employed in the purchase of preparations, models, etc., which would be of great and lasting value to both teachers and students.

Library. The collection of books has been added to somewhat during the year, notably by the gift of Dr. Slade.

As mentioned last year, "books which treat of animal life, of the development of species, of the formation of the more celebrated breeds of the domesticated animals, of the general care and feeding of animals, of animal mechanism, as well as of the more absolutely technical subjects, in either English, German, or French, will be repeatedly read and thoroughly appreciated."

Finances. The accounts for the year show a deficit of $1576.12, notwithstanding that the running expenses of the establishment were $1762.19 less than for the previous year. This result is directly chargeable to a falling off of $4143.94 in the hospital receipts, and, since during the past year the hospital staff has remained the same as it was in 1886–87, when a surplus of $652.22 was earned, the deficit this year can only be attributed to the lessened amount of time that they could devote to the hospital work from the needs of their outside practice. An examination of the accounts, however, will show that in any case the Hospital amply pays for itself, and that it is the School which causes the deficit. To carry on the School costs about $5000; but as the income of the School has averaged only $2577.42 during the last four years, it follows that the School burdens the Hospital to the amount of about $2400 each year.

As the School and the Hospital are so closely united in their interests, the most desirable way of preventing for the future a repetition of this year's financial experience is, by endowment to make the buildings the property of the School, and thus free the Department from rent and tax-charges amounting to $2571.36 a year. Other suggestions are: —

1st. To enlarge the hospital staff at the risk of not increasing proportionally the earnings.

2d. To lower the standard of the School.

3d. To close the School for a few years and let the Hospital earn money with which to pay off the present debt.

When the Hospital was established it was the intention to hold a free clinic upon certain announced days. This we have never been able to do beyond a very limited extent. Still, animals are now brought to us more or less frequently that might be cured by remaining for a few days in the Hospital; but their owners cannot afford to pay for their treatment and board. We are in no position, as we should like to be, to receive such charity patients. The result often is, the animal suffers for a few days and then dies or becomes useless; while his owner loses his savings and for a time his means of support. It would be well, if one free stall could be endowed and placed, perhaps, at the disposal of the S. P. C. A. In this way I am sure a good deal of animal suffering can be relieved, and many a poor man's means of support saved to him for a time.

CHARLES P. LYMAN, *Dean.*

THE LIBRARY.

To the President of the University:

Sir, — Three numbers of the *Bulletin of Harvard University* have been issued under the immediate charge of the Librarian during the past year. Of the *Bibliographical Contributions*, also issued separately by the Library, six have been published. The first is *A Catalogue of books on Oliver Cromwell and Frederick the Great, bequeathed by Thomas Carlyle to Harvard College Library*, prepared by William C. Lane, Assistant Librarian. The second is *A few notes concerning the Records of Harvard College*, by Andrew McFarland Davis. The third is *A Fourth List of the publications of Harvard University and its Officers, with the chief publications on the University*, 1886–1887, which has been compiled by Mr. Tillinghast, Assistant Librarian. It is the second of a series of annual lists, which form a continuation of similar lists, which earlier embraced periods of five and ten years. The fourth is an *Index to Recent Reference Lists*, no. iii. 1887, by William C. Lane. The fifth is *Shelley's Skylark, a facsimile of the original manuscript, with a note on other manuscripts of Shelley*, which it was possible to issue, because of a gift of the manuscripts in question from Mr. Edward A. Silsbee. The last is a *Supplemental List of works on North American Fungi*, by Professor W. G. Farlow.

The accessions to the University Library for the year, and the present extent of the various departments, are as follows: —

Departments.	Volumes added.	Present extent in	
		Volumes.	Pamphlets.
Gore Hall (College Library) .	10,885	259,506	248,003
Law School	677	23,657	3,022
Scientific School	. . .	2,717	800
Divinity School	4,027	20,815	2,393
Medical School	50	1,550	. . .
Museum of Zoölogy	343	17,903	9,658
Astronomical Observatory . .	299	4,099	7,575
Botanic Garden	105	5,286	3,229
Bussey Institution	20	3,005	935
Peabody Museum	62	1,021	1,067
Totals	16,468	339,559	276,682

If to this total of 339,559 volumes be added the 2759 volumes collected in the laboratories and class rooms, we have a grand total of 343,318 volumes for the University Library.

There has been a considerable number of books removed to other departments from the Scientific School, which prevents for that library any figures of net increase this year. The count of the Divinity School includes for the first time the books received last year from the estate of the late Professor Ezra Abbot, being 3770 in all. Nearly a thousand duplicates among them have been sold.

The Whitney Library of Geology, a component part of the collection in the Museum of Zoölogy, is not yet included in the count of the Museum Library; while on the other hand no deduction has been made for volumes parted with on exchange account.

I made last year a statement regarding the institution and reorganization of two new kinds of subsidiary libraries: those attached to the laboratories and to several of the class-rooms. Later in the year, by direction of the Library Council, I closely inspected all the parts of the grand University Library outside of Gore Hall, and made a statement of their condition and needs, coupled with some recommendations. As these required the action of the Corporation my report was transmitted by the Council to the President and Fellows.

I have now to report the present extent of the laboratory and class-room libraries: —

	Permanent.	On Deposit.	Totals.
Laboratories.			
Chemical	553	. .	553
Botanical	248	. .	248
Class-Rooms.			
Greek	186	175	361
Latin	11	121	132
United States History	612	. .	612
Political Economy	420	. .	420
Mathematics	165	75	240
French	522	. .	522
English	20	. .	20
Sanskrit	22	. .	22
Totals	2,759	371	3,130

An assistant is sent from the Central Library every week to examine the shelves of these libraries by the shelf-lists, and the titles of missing books are reported at once to the officer of instruction in immediate charge of the library where such loss or misplacement has been discovered. Temporary loans of books from Gore Hall are made to these libraries to facilitate the instruction of the several departments.

Six of these libraries are now open evenings, and thus additional hours are available to the students beyond the daylight for using books which belong in Gore Hall.

The institution of these libraries has followed upon the change in methods of instruction which have taken place of late years in the College, whereby the students are brought into closer relations with the literature of their subjects, instead of being confined to the use of text-books. This led in the first instance to the custom of what is called "reserving books" in alcoves appropriated to the several courses of instruction, whither the student could readily go to consult the books referred to in the lectures of the professors. In the next place there soon became apparent the necessity of relieving the pressure upon these alcoves of reserved books; and, as there seemed no way of enlarging the capacity of our reading-room, these class-room libraries have grown to meet the difficulty.

The system is not without palpable disadvantages. It puts the useful books of any department in the different buildings, impeding somewhat the practice of collateral reading. It puts beyond the easy reach of frequenters of Gore Hall books that are sometimes much needed for reference. It increases the range of liability to loss of books.

On the other hand, the advantages of the system seem to accord with the first principle of library administration, that the use of books should be increased to the utmost. It can hardly be expected that in the beginning of the system the happy mean of advantages shall be reached; but experience, as the system grows, will doubtless serve to resolve, in a reasonably satisfactory way, the difficulties which have been indicated.

Of the accessions to the Gore Hall Collections there were added by gift 3946 volumes and 7153 pamphlets; and the accessions also include 798 volumes of bound serials (received in parts), and 720 volumes made by binding pamphlets.

The accessions of recent years to the University Library have been reported as follows: —

In 1879	10,389 vols.	In 1884	12,360 vols.
" 1880	7,247 "	" 1885	14,558 "
" 1881	9,804 "	" 1886	9,191 "
" 1882	9,192 "	" 1887	11,924 "
" 1883	9,818 "	" 1888	16,468 "

The following tables show the use of books at Gore Hall in 1887–88 as compared with previous years: —

	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
1. Books lent out . .	48,194	48,231	48,655	52,322	60,195	62,861	65,639
2. Used in the building	10,498	8,654	9,047	9,433	8,816	12,041	15,267
3. Overnight use of reserved books .	12,891	12,678	11,399	13,791	18,505	20,052	20,360
Total (excluding No. 3, which is incl. in No. 1)	58,692	56,885	57,702	61,755	69,011	74,902	80,906
Officers of instruction reserving books .	41	44	48	48	56	56	. .
No. of books reserved	4,251	4,316	4,782	5,230	5,840	6,280	6,549

It is no longer practicable to indicate the number of instructors reserving books, since the classes in several courses are now divided among more than one instructor, and we have no means of knowing whether they all make use of the system.

The increase in the number of books reserved — of whose hall-use no record is kept — has a tendency to decrease the number of volumes used in the building, of whose use record is made. In addition to the books reserved by instructors, now amounting to 6549 volumes, there are in the reading-room 1844 volumes carefully selected for students' reading by the instructors in their several departments. Of these, 1327 are English, 354 French, 119 German, and 44 Italian. The use of these books is not governed by the restrictions applied to reserved books, but the books may be taken out as other books are.

In the Delivery Room are 5075 volumes, all of which are accessible to students. Of these, 2947 volumes are bound periodicals which may be taken out as seven-day books, and 2128 volumes are for reference only, comprising dictionaries, encyclopædias, and the most useful books of reference in all departments.

Of the 1545 books sent to the "Annex" during the year, 301 were from the class of "reserved books," while the proportion last year was 383 out of 1230. The number of separate students of the "Annex" who borrowed books during the past year was 66 — a large increase over the number during recent years.

SUNDAY USE.

	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
Sundays open . .	36	36	36	37	37	37	37
Persons using . .	2,067	2,268	2,448	2,631	2,842	2,880	2,894
Average	57	63	68	71	76	77	78
Highest number .	91	92	95	105	108	118	106

It will also be seen by the following tables that the use of "Admission-Cards," by which students have access for investigation at the shelves to special classes of the books, is steadily gaining in favor, judging from the increased frequency of such use: —

ADMISSION—CARDS.

	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.
History	49	46	45	52	68	74	71
Science	26	16	18	12	14	12	14
Art (including Music) .	22	14	12	14	16	13	16
Literature	36	42	37	42	49	62	54
Classics	49	36	42	53	52	47	42
Philosophy	6	5	6	8	9	8	9
Theology	4	3	8	9	12	15	11
Political Economy . .	8	5	8	12	44	64	49
Total students	200	167	176	202	264	295	266
Times of use	2,542	3,340	3,520	4,020	5,820	7,375	7,980

The College teachers who have students under instruction in the methods of research are still given such facilities as the Library building affords for the accommodation of their classes; but the advantages of the building are in this direction far from what they should be.

STUDENTS' USE OF THE LIBRARY.

1883-84.			1884-85.		1885-86.		1886-87.		1887-88.	
Students of	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.
Divinity . . .	21	21	26	26	25	25	20	20	16	16
Law	146	118	153	122	154	136	180	108	215	175
Scientific . .	26	17	28	21	22	18	14	10	20	18
Resident Grad.	68	51	70	52	64	62	56	54	83	76
Senior Class .	209	188	191	170	232	214	239	231	237	234
Junior Class .	195	171	234	216	236	228	238	215	214	209
Sophom. Class	248	210	256	220	232	216	224	206	281	234
Freshm. Class	253	202	255	205	258	201	280	195	295	229
Totals . .	1166	978	1213	1032	1231	1100	1251	1039	1331	1191

The percentage of users among the undergraduates has risen during recent years, as follows: —

	1879–80.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
For Seniors	88	90	90	92	96	99
For Juniors	83	88	93	96	90	98
For Sophomores . . .	83	85	86	93	92	94
For Freshmen	65	80	80	78	69	77

The result is this: thirteen years ago* 57% of the students, and during the past year over 89% used the Library, and if we exclude the Freshmen, 97%. Of the Seniors it will be observed only 1% failed to use the Library. Of the 1027 undergraduates only 121 failed to borrow books, and some of these probably used the reserved books in the Reading Room. The libraries of the students' clubs doubtless provide general reading for a considerable number of undergraduates.

These statements do not cover the use of "reserved books." Nor is there any record of the use made of the 451 periodicals, current numbers of which are on file in the Reading Room.

The number of persons registered and entitled to take books away from the Library building is as follows: —

Students	1,222
Instructors	136
Others	259
Total	1,617

Mr. Kiernan kept, during January, February, and March, 1888, a record of the fiction used. Of the 15,540 books drawn out in those months, 3027 volumes were prose fiction, or less than 20% of the whole, and these were mainly taken by the lower classmen.

Mr. Frank Carney, who under Mr. Tillinghast has charge of the shelves, reports that 3916 volumes have been permanently placed in the new stack since the last report, making 106,265 so placed out of the volumes constituting the Gore Hall collection. This number is smaller than heretofore reported, because no new branch has been added to the classifications previously arranged. Until the original Gore Hall is reconstructed, there can be no further progress made in reclassifying the Library.

Mr. Carney verified the shelf-lists of the classifications in the stack, between the 13th of July and the 8th of August, showing about 130,000 volumes. The number of volumes which failed to be accounted for was 49. Of those reported missing in previous years

---

* See table in previous reports.

19 were found in their places. Of books reported missing since 1883 there are still 212 unaccounted for. Of these 49 unaccounted for volumes of the year just closed about one half have disappeared from the books of reference, reserved books, and other collections exposed to the handling of all frequenters of the Library, the other half having disappeared from the shelves to which only the staff of the Library, officers of the College, and a limited number of other persons have access. This kind of irregularity in a large library is one of the most perplexing problems which the librarian encounters, and it is not easy to determine the limit when license transcends proper liberal privileges. A share of these losses is of course temporary, arising from misplacements and other carelessness; but constant vigilance is necessary to prevent practices which, of little moment individually, become collectively an evil of great dimensions.

Mr. Lane furnishes the following figures about the work of the Catalogue department: The total number of titles catalogued for the year (1887–88) has been 8423, of which 6711 were of books recently received, and 1712 of "old work," *i.e.* books received before 1860, when the present card catalogue was begun. Nearly all of this old work has now been recatalogued on the cards open to the public.

In addition to these 8423 titles which have passed into the Gore Hall Catalogue there have been 843 titles catalogued of books received for the departmental libraries, of which a duplicate set of cards has been sent to the department, while 448 titles have been recorded here as added to other departmental libraries which do not require the duplicate cards.

The present year's work may be compared with other years as follows: —

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
1. Gore Hall cards written	17,015	21,524	30,968	32,580	29,229	23,696
2. Do. distributed in card catalogue . .	29,480	40,542	55,235	53,280	43,780	43,000
3. Titles catalogued for departments . . .	. . .	. . .	. . .	957*	1,021	1,291
4. Volumes received in Gore Hall	8,441	9,879	12,442	6,730	9,108	10,885
5. Approximate hours' work of the catalogue department.	16,908	26,221	24,211	25,000	24,100	22,676

---

* In previous years the record was by volumes, not by titles.

To the 43,000 cards distributed must be added 59,000 handled in rearranging certain parts of the Catalogue, to be presently mentioned.

About 2064 volumes were on the shelves of the catalogue-department on Oct. 1 waiting to be catalogued, but all except 75 of these had been received since January 1. They include two considerable gifts, one from Mr. John Harvey Treat (H. C. 1862), of a valuable collection in patristic and ritualistic subjects, and the other from Colonel Henry Lee, being a collection in political economy formed by his father.

The printing of the Index to the subject-catalogue has proceeded slowly, 80 pages being now in type, which brings the list into L.

Two important changes have been made in the Catalogue during the year. The first has been the use of the type, as set for the Bulletin, to print the titles on cards for the public card catalogue, so far as they appear in the Bulletin, which is about one third of the total cataloguing for the year. It has been found thus far — though the result may be changed by longer experience — that the saving in the cost of transcribing has been singularly near the cost of printing. If there is no change in this proportion in the future, the experiment is likely to become the practice.

The other change was not instituted without sending beforehand the following circular to the instructors of the departments particularly interested; and as the circular explains the change, it is given herewith: —

GORE HALL, May 7, 1888.

TO THE MEMBERS OF THE CLASSICAL AND THEOLOGICAL FACULTIES.

GENTLEMEN: — In our public card catalogue the Greek Authors, Latin Authors, and Church Fathers have always occupied an anomalous position in being placed in the *subject* catalogue instead of in the *author* catalogue. They have further been treated differently from other authors in that the works *about* them have been placed side by side with the works *by* them — a manifest advantage. In order to gain the same advantage for other authors, and at the same time to simplify and harmonize the plan of the whole catalogue, it is proposed to make the following two changes: (1) to distribute the cards for the works of Greek and Latin authors and Church Fathers to their natural alphabetical places in the general *authors'* catalogue, still keeping with each author's works (as at present) the works which relate to him; and (2) to add to the same catalogue the works relating to other authors (now under Biography and Bibliography), placing the works that treat *of* any author directly after the works *by* him.

The result will be that Greek and Latin authors and the Fathers will be treated as standing on exactly the same ground as other authors, and that everything *by* or *about* any individual will be found in one place, viz. under that individual's name in the author catalogue.

I am directed by Mr. Winsor to call your attention to this proposal, and to request that if you have any objections or criticisms to make in regard to the plan as affecting your own convenience in the use of the catalogue, you will kindly communicate them to him or to the undersigned.

WILLIAM C. LANE, *Assistant Librarian.*

The gentlemen addressed expressed no disapproval of the plan, and the change was accordingly carried out. It was found that there were about 59,000 cards to be handled in making the change, besides shifting the great body of cards in the drawers. Of these about 10,000 were cancelled, the change and consequent consolidation rendering them of no further use. The work was done between June 29th and Aug. 16th, and was so conducted as to interfere with the public use of the Catalogue in the least possible degree.

Mr. Tillinghast, Assistant Librarian, and head of the Ordering department, has made a very full report upon the work and condition of his share of the Library service. I can make but a brief abstract of some of the more important points of his statement.

At the end of the Library year the estimated cost of orders then out (including "continuations," reckoned at say $5700) was about $10,200, and it was expected that about $5800 of these would come in, to be paid for during the coming year. We carry forward a balance in our favor on the Treasurer's books of about $4400, which may increase our available income for the next year to about $20,000, which amount is already pledged for say $8675 (that is, orders out $5800, periodicals and binding $2400, freight $475), leaving a free balance of say not far from $11,000.

The following table contains a summary of our financial condition during six years: —

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.
Income for books†	$24,849	$22,691	$17,570	$16,245	$19,341	$20,407
Spent	17,412	18,991	16,533	13,923	14,549	16,062
Balance	7,437	3,700	1,037	2,321	4,791	4,345
Appropriation . .	22,770	23,670	17,500	none.	17,500	19,000
Unpledged balanc's	18,143	11,513	6,396	7,180	12,032	12,080

During the year 1886–87 we sent out orders the estimated cost of which was about $7047; during the past year they have amounted to $6805. This amount was divided among agents as follows: Domestic, $1300; English, $2150; French, $1035; German, $1950; Italian, $112; Scandinavian, $56.00; Bombay and Cairo, $170. Several expensive works by European authors were bought in London.

---

† The items of income include unexpended balances of the previous year.

The following table shows the proportions of certain items to income and appropriation: —

Year.	Proportion of appropriations to income.	Proportion of liabilities to appropriations.	Proportion of money pledged for annual continuations, etc., to appropriations.
1880–81	.89	. .	. .
1881–82	.81	.76	.44
1882–83	.91	.70	.29
1883–84	1.04	.87	.47
1884–85	.99	1.01	.63
1885–86	none made	.87 (to income)	.55 (to income)
1886–87	.88	.82	.41
1887–88	.93	.78	.42

The charge for "continuations" during the last year, $5770, is $600 in excess of any previous year. By a series of experiments Mr. Tillinghast has made it apparent that about one half of the possible liability for "continuations" is pretty sure to correspond very nearly with the actual cost when received. This arises from the varying and uncertain intervals between successive parts of many of this class of books. How near this estimate serves in practice will appear from the estimate in Oct. 1887 of the cost of continuations for the ensuing twelve months, which was $2551.25, while the amount actually expended during that time was $2458.34. In this interval only about 500 of the works received serially, of the 1951 on our list, were included, or nearly one quarter of the whole. That the expenditure is one half of the possible liability shows that the most costly continuations have a more certain periodicity.

The following table indicates for four years past the extent and variety of orders dealt with by the Ordering department, and shows that more than 10,000 slips are arranged and kept in mind in the daily work of those in charge of this department: —

Order slips on hand October 1st.	1885.	1886.	1887.	1888.
Book orders out	2,268	1,487	1,539	2,112
Continuation orders out	1,536	1,637	1,819	1,951
Total active orders	3,804	3,124	3,358	4,063
Cancelled orders.	5,188	6,675	6,268	7,625
Deferred orders	1,416	531	488	541
Slips for reference use	. . .	110	186	124
Slips not signed and of little value .	76	76	76	76
Grand total	10,484	10,516	10,326	12,429

I have no report for this year from the Curator of Coins, who is absent for his health. He returned the collection to the Library during the past summer, the classification being unfinished.

In the map department Mr. Henry C. Badger has gone over the maps of the World, Europe with subdivisions, Russian and Asia Minor, in preparing the titles for printing, and has further perfected the chronology and grouping of the whole collection. He has made a special grouping of the plans of the lands and buildings of the University, including those estates which have belonged to the College at any time. In doing this he has also searched the manuscript records preserved in Gore Hall, and in the Treasurer's and Bursar's offices. The result of this work, so far, is a bound volume, *The Real Estate of Harvard University*, which records every such map and plan now known, and notes its place of deposit. Some of the most interesting views and plans of College buildings, dating back to the close of the last century and coming down well into the present, were found in a collection of mathematical theses preserved in the College Library, which in part represent the graphic work of students in working out problems of surveying and perspective. They fall between the years 1782 and 1839, numbering 406, and are most interesting memorials of students of those years, many of whom have since attained positions of eminence. These manuscripts have suffered from neglect, but have now been put into good order, and during the coming year a list of them will be printed.

JUSTIN WINSOR, *Librarian*.

GORE HALL, Nov. 17, 1888.

THE HERBARIUM.

To THE PRESIDENT OF THE UNIVERSITY:

SIR, — The Herbarium has necessarily been seriously affected in its work and interests during the past year by the death of its late director, Dr. Asa Gray, by whose personal efforts and influence it had been built up and sustained, and whose presence as he went in and out in the wonted course of his daily labors had always suggested an abiding spirit of tireless energy and assured efficiency. Upon his return from England he had resumed at once his work upon the Flora of North America, and to the very last his pen was active upon botanical subjects. After his death it was found that he had bequeathed in aid of the Herbarium the copyrights upon all his text-books, which will probably for some years add materially to the income of the present fund. As, however, nothing could accrue from this source before the close of the year, it has been necessary to restrict to some extent the expenses of the Herbarium, though the work has gone on much as usual.

The number of sheets of specimens that have been added to the mounted collections is 3602. The additions to the library have been 95 volumes (of which only 15 have been by purchase) and 146 pamphlets. During the year the important collections of plants made by Mr. C. G. Pringle in 1887 in the mountains of Chihuahua (364 species), by Dr. E. Palmer at Guaymas and other localities on the Gulf of California (430 species), by Mr. J. G. Lemmon in California (150 species), and by Professor Macoun on Vancouver Island (70 species), have been determined, as well as many smaller sendings from nearly all parts of the country. In addition there have been received a portion (300 species) of Sentenis' collection made in Porto Rico, obtained by purchase; an interesting set of Saghalin plants, presented by Mr. Miyabe and of his own collection; an instalment (200 species) from Messrs. MacOwan and Bolus, of Cape Town, of their collection of South African plants; and from Mr. Dyer, Director of the Herbarium at Kew, several very valuable collections, including Dr. Aitchison's Afghanistan plants (550 species), Dr. Henry's from northern China (382 species), Professor Balfour's from Socotra (120 species), Salvin's Guatemala ferns (200 species), and smaller collections from Patagonia, New Zealand, and the Philippine Islands.

The publications from the Herbarium during the year have been two short papers left by Dr. Gray, a "Botanical Contribution" by the Curator, in the Proceedings of the American Academy, and various minor articles in the botanical journals.

SERENO WATSON, *Curator*.

November 24, 1888.

THE BOTANIC GARDEN.

To the President of the University:

Sir, — As Director of the Botanic Garden, I have the honor of presenting the following report for the academic year 1887–88: —

The past season was favorable for nearly all classes of our plants out of doors. The lateness of the spring and the unusual amount of rainfall in the early weeks of summer enabled us to cultivate successfully more annuals than in previous years, and to carry on also the planting of perennials. The changes to which reference has been made in former reports have been nearly completed, with the exception of the projected improvements in the ponds: the abundant supply of water rendered the latter improvements temporarily unnecessary.

It is well-known that cloudy weather during the winter months largely increases the consumption of coal in greenhouses: last winter we had to burn more coal than in any recent year, but it was suspected that part of our trouble was due to defects in the arrangement of our heating apparatus. An attempt has now been made to remedy these. A new boiler has been added to the system, and the three boilers have been so placed that we can use one, two, or three of them at one time. They are provided with cut-off valves, so that in event of an accident to one member of the system, heat can be supplied until the injury is repaired. This heavy expense for rearrangement of the boilers appears to be further justified by the complete dependence which we are now obliged to place on our greenhouses for the supply of materials to our large classes in spring.

Changes in the arrangement of plants in the plots out of doors and in the houses have been so fully described in previous reports that they need not be further referred to, except to add that they have met with general approval and are now regarded as important improvements. This is also true of the addition to our list of plants of certain horticultural novelties, which were provided through a gift of money from an anonymous donor. The gift will be continued during the coming year.

The primary aim of the Garden is to provide sufficient material for our botanical classes and for special students. The Director has had assistance from the Arnold Arboretum and the Bussey Institution in the development of his plans for securing the very large amount of material for dissection needed in March and April, so that the range of selection is now sufficiently wide. The following electives have been well supplied with all the plants required for their study: Natural History 3, the first course in Botany, taken by more than 125 students; N. H. 5, Biology; N. H. 7, the second course in Botany; N. H. 11, Systematic, Physiological, and Economic Botany; and the Summer School in Botany. Plants and flowers required in botanical study have also been supplied in sufficient quantities, for a moderate compensation, to the Society for the Collegiate Instruction of Women, and there appears to be no good reason why this arrangement should not be continued. The amount received from this source appears in the Treasurer's report (p. 40).

The Garden has had a large number of visitors, especially on Sundays during the spring and autumn. Two of our men have been on duty Sundays, and they report that there have been no serious depredations. A few plants of purely scientific interest have disappeared, but the total losses are small. It is pleasant to note the increasing number of visits from schools accompanied by teachers. It is plain that the advantages for illustration offered by the Garden are appreciated by many of the teachers of Botany in Boston and vicinity. Our greenhouses are not adapted to receive large classes of pupils at one time, owing to the narrowness of the pathways and the crowded condition of all the compartments in the winter. We have therefore sought to discourage visits of schools at that season. At all other times they are welcome.

Extensive repairs have again been found necessary in some parts of the range of houses; but, considering the slight manner in which some of the houses were originally built, this expense has been no larger than was reasonably to be expected. The new houses are in excellent condition.

The Botanic Garden has been represented at nearly all the exhibitions of the Massachusetts Horticultural Society during the past year. The generous friend of the Garden, to whom reference has been previously made, has continued his subsidy for defraying the large expenses attending these exhibits, and he has expressed himself sufficiently well satisfied with the results to continue the gift for at least another year. By a misunderstanding, the Garden was unfortunately made to appear as a contestant for certain prizes, and received them through the head-gardener, notwithstanding the fact that over all our exhibits was conspicuously placed the announcement that the plants were not entered in competition. It is believed that this annoying error will not occur again, and that the Society's committees will regard the wishes of the Director. None of the exhibits attracted greater attention than those of native plants sent from that part of our Garden which is behind the range of houses and is devoted wholly to our native species. These plants are now thoroughly established and indicate to what a large extent our showy native plants can be utilized for purposes of decoration.

The lecture-room and laboratory at the Garden were used during July by the summer class in Botany, under the care of the Director and the Assistant in Botany, Mr. W. F. Ganong. The interest shown by those attending these courses indicates that the instruction meets a want felt by many teachers, and it is clear that the month spent in Cambridge serves to attach to the University many of these teachers in our higher schools. No one can see the zeal with which these persons pursue the study of our plants without becoming convinced that it would be a mistake to abandon the summer course in Botany. It is, however, a matter of regret that the course in Botany is taken by so small a number of college students. The course will be given in 1888–89.

Our foreman, W. A. Manda, left our employ at the end of the year to engage in a private enterprise. His services during the whole term of five years were of great value to the Garden, and were satisfactory in all particulars. His place has been taken by Robert Cameron, who has served for a period of three years at the Royal Gardens, Kew, and brings thence excellent testimonials.

The botanical laboratory at Harvard Hall has been used by the advanced students in Phaenogamic Botany, and the rooms have answered every purpose for these classes. It was, however, found absolutely impossible to receive in these rooms the large class in botanical analysis, and this instruction was therefore given in the only room available for the work — Upper Massachusetts Hall. In the latter room the students carried on their work under great disadvantages in many ways. The need of convenient rooms of sufficient capacity for these large classes in Botany is apparent; this need will probably be met in the academic year 1889–90.

The equipment of the botanical laboratories will need some expenditures in about two years, but will serve for the present.

The addition to the University Museum designed for Botany has made good progress. The building is roofed in, and it is probable that work on the interior will be resumed in the spring and completed before next autumn. The assignment of rooms for the different collections and laboratories has been made provisionally; but it is not thought expedient to present the details in the present report. Attention should, however, be called to the fact that, through the generosity of Mrs. C. E. Ware and Miss Mary L. Ware, of Boston, it will be possible to devote one of the rooms in the new building to a synoptic exhibit of analytical models of the genera of our American plants, prepared by the artist who has constructed the glass models of marine invertebrata now displayed in the zoölogical department. In designing the plans for the Museum addition, the Professors in Botany have received aid at every point from the Curator of the Museum.

Important accessions have been received in the department of Economic Botany, especially through the kindness of the authorities at Kew, and of Mr. W. C. Sturgis. The latter has presented to the Museum a large and valuable collection of specimens of East Indian drugs, authentically named. In the products of India and Australia our collections are now very extensive, but are wholly unarranged.

By hard work during the coming winter they can be properly prepared for display.

During the year the Garden has received large gifts of money for present use, which are specified in the Treasurer's Report. Under the head of expenditures for the Garden are included all the money paid out (1) for keeping the Garden and greenhouses, as well as the dwelling houses at the Garden in proper condition, (2) for defraying the cost of preparing and caring for the Museum specimens, and (3) for the purchase of additions. Under the same head is placed also a part of the cost of carrying on the laboratory of Phaenogamic Botany, and a portion of the salary of two assistants in charge of collections. The outlay for repairs, materials, and labor at the Garden proper constitutes only about two thirds of the total expenditure.

From Miss Anna C. Lowell the Treasurer has received the sum of one thousand dollars towards the "Lowell Fund for the support of a Botanic Garden."

There has been reported as subscribed to the fund for the addition of the University Museum the sum of $65,000. Of this amount, the Treasurer reports as having been paid up to the end of the fiscal year the sum of $40,000. There is now required for the completion of the building, besides the amount already subscribed, about $20,000. For current expenses certain sums have been contingently promised.

The Director has been much aided in his work by the sympathy and hearty coöperation of the Overseers' Committee on the Garden. The Chairman of the Committee, Henry Lee, Esq., has devoted much time and energy to the affairs of the Garden and Museum, and has been of much assistance in many ways.

The year has been darkened by the loss of our wise and patient counsellor, Professor Asa Gray, whose interest in the Garden continued up to the very morning when he was stricken with his fatal illness. It has been and still will be the endeavor of his associates to carry out as far as possible the plans which he had formed for the advancement of all the botanical interests in the University.

GEORGE LINCOLN GOODALE, *Director.*

THE ARNOLD ARBORETUM.

To the President of the University:

Sir, — I have the honor to submit the following report of the condition and progress of the Arnold Arboretum during the year ending August 31, 1888: —

Practically nothing has been done during the year towards extending the plantations of trees in the Arboretum. The Park Commissioners of Boston ceased work upon their roads in December and have not recommenced it. It was possible to plant a few trees in the spring — about a dozen in all — to complete the Walnut and Birch groups; and to cover with shrubs the slopes of the short piece of road finished last autumn. This was done; but I have been unable to make any preparation during the year for additional planting; and none can be done until another section of the road and its slopes are, at least, graded. This delay is to be regretted. A large number of trees have been procured, or have been grown in the nurseries, with the expectation that a certain part of the Arboretum could be planted each spring until the whole work was finished. It has now been found necessary, however, to dispose of a part of these trees, and a number of years must elapse before another supply can be ready for permanent planting. The loss of time is serious and must result in injury to the Arboretum. The stoppage of all construction has made it possible, however, for the officers of the Arboretum to devote more time to the study, arrangement, and extension of the shrub-collection and to the care of the natural woods. These last continue to improve under the system of management established in the Arboretum several years ago.

Interchange of Plants and Seeds.

The interchange of plants and seeds with other Botanical and Horticultural establishments has been continued throughout the year. 6666 plants and 314 packets of seeds were distributed as follows: To all parts of the United States 4847 plants and 8 packets of seeds; to Canada 368 plants and 125 packets of seeds; to Great Britain 968 plants and 70 packets of seeds; to the Continent of Europe 482 plants and 121 packets of seeds. There have been received during the year 8307 plants (including 5792 native shrubs collected by Mr. Dawson) and 48 packets of seeds.

Herbarium and Museum.

The ordinary work of the Herbarium and Museum has been continued. During the year 640 sheets of dried plants have been added to the collection. The most valuable gift received during the year is a series of wood specimens, numbering several thousand, used in determining the specific gravity and the resistance under transverse strain and under compression, of the woods of the United States, in connection with the report prepared by me on the American Forests for the 10th Census of the United States. These specimens became, under the law authorizing the taking of this Census, the property of the National Museum. The whole series has, however, been divided into two sets nearly equal in value, and the second of these sets has now been presented to the Arboretum by the Secretary of the Smithsonian Institution and by the Director of the National Museum.

Numerous collections of foreign woods and other vegetable substances have been received in exchange from the Director of the Royal Gardens at Kew. Other important gifts during the year are, a set of Indian plants from Sir D. Brandis, formerly Director General of the Indian Forests; Japanese, Chinese, and Indian plants, and museum specimens from Dr. H. Myer, now of the University of Japan; Japanese plants from Professor Brooks of the Agricultural College at Saporo; plants of central China from the Herbarium of the Royal Gardens, Kew, and a large collection of photographs, principally of European forest scenes, from Mr. Francis Skinner of Boston.

Much of my time and attention during the year has been devoted to the establishment of a weekly publication intended to extend and popularize the knowledge of trees and their cultivation, and of gardening and garden-botany. There existed no journal or periodical bulletin, published in this country, in which the results of the experiments carried on in the Arboretum, and the mass of facts about plants, and the cultivation of plants constantly accumulating here, could be printed promptly and regularly, so that they could reach the large number of students now interested in these subjects. The first issue of *Garden and Forest* appeared on the 29th of February, and there is already reason to believe that this journal will aid materially in increasing the educational value of the Arboretum and in extending its influence.

C. S. SARGENT, *Director.*

THE CHEMICAL LABORATORY.

To the President of the University:

Sir, — The courses of instruction given in the Laboratory were increased the past year by the addition of a supplementary course in Quantitative Analysis, designated as Chemistry 4*a*. Skill in Quantitative Analysis is an essential condition of success in the solution of chemical problems, and the practice that could be obtained in the time assigned to a single College course has not been found adequate for the needs of those students who expect to make a practical application of their knowledge. It is expected that the new course will fully supply the deficiency.

The attendance on the courses given in the Chemical Laboratory was very large as is shown by the following schedule which is compiled from the Laboratory books: —

		Designation of Courses.	No. of Students.	
Chemistry	*A.*	Elementary Lectures	over 300	
"	*B.*	Experimental Chemistry	78	
"	*C.*	Lithology	13	
"	1.	Descriptive Chemistry	83	
"	2.	Mineralogy	61	
"	3.	Qualitative Analysis	41	
"	4.	Quantitative Analysis	20	
"	4*a*.	" " (supplementary course)	6	
"	5.	Organic Chemistry	9	
"	6.	Problems in Inorganic Chemistry	3	
"	7.	Crystallography and the Physics of Crystals	8	
"	10.	Advanced Study and Research	4	626
Summer School				63
		Total		689

Many of the students took more than one laboratory course, and as no exact analysis could be made of the large audiences attending the elementary lectures, it is not possible to state accurately the number of separate students attending the laboratory courses; but it is obvious that quite one half of all the undergraduates received some small measure at least of instruction in Chemistry, and at least one quarter availed themselves of the facilities for experimental work which the Laboratory offers.

As the question has been raised of the adequacy of legitimate scholarly inducements to secure proper attention to College work, it may here be stated that the constancy of the attendance on the laboratory exercises is all that could be desired. It is undoubtedly true that — as a considerable additional fee to cover the necessary expenses is exacted of all who use the Laboratory for experimental work — persons are not likely to elect laboratory courses who do not value the privileges thus obtained. But this is the very class of men which it should be the aim of an educational institution to protect as well as to encourage; and it is obvious, from the above figures, that this class must be a very large part of the whole body of College students. To submit such men to unnecessary restraint on account of weaker or more self-indulgent brethren would be an injustice to them and a great injury to the scholarly tone of the College. It has been said that as society imposes restraints on all the community on account of its vicious classes, so should the college; but surely, if police regulation repressed the healthy growth of the noblest and most beneficient activities of a community the restraints would become intolerable; and only under such circumstances would the cases be parallel. Moreover, membership of the college community is a matter of choice, and no one has a right to demand that the freedom of a large majority of good men should be abridged in order to shield moral weakness when a simple remedy, which can injure no one but the incompetent, is at hand. In the Laboratory, restrictions which might be tolerable in a course consisting solely of lectures and recitations would do irreparable injury, not only by damping the enthusiasm of the students, but also by impairing the good feeling and freedom of perfect intercourse which now prevails between the students and their instructors; and hence the relevancy of the discussion of a policy of general discipline in this place.

The equipment of the Laboratory has been largely increased and improved during the past year. During the summer vacation of 1887 a new laboratory was fitted up in place of the lecture-room formerly on the first floor, at the west end of Boylston Hall. It was equipped especially for the class in Experimental Chemistry (Chemistry *B*), and furnishes accommodations for 128 students, working in two divisions. This excellent accommodation has greatly increased the efficiency of this course, and during the present year enables us to double the amount of experimental work for those students who wish to take Chemistry *B* as a full course.

During the winter very extensive repairs were made in the plumbing and steam-fitting of the building. In a laboratory constantly used by so large a body of students all such fixtures suffer rapid deterioration, and the cost of keeping them in order is necessarily large. During the period of the Christmas recess, when work in the building was suspended for nearly two weeks, the interior of Boylston Hall was repainted, and the whole appearance of the rooms, which had become very shabby from long use, was greatly improved. Students are very greatly influenced by their surroundings, and it is of first importance to keep the laboratories, in which neat and accurate scientific work is expected, in the best condition.

All students using the Laboratory are charged an extra fee, varying from $5 to $30 yearly (in addition to the cost of their breakage), to cover laboratory expenses; but the income thus received is barely sufficient to meet the ordinary running expenses. The Laboratory has no funds which can be drawn upon for the repairs which, with the increasing age of the building and of its equipments, are becoming every year more serious. The small surplus to the credit of the Laboratory in the Bursar's accounts, which had been accumulated during previous years, was exhausted by the repairs of last year, although the cost of painting and of the general repairs of the building was defrayed from the general funds of the College. As such charges increase with the deterioration of the equipment, the present income will be insufficient to maintain the Laborarory in its present efficiency.

The Director has repeatedly called attention to the condition of the roof of Boylston Hall, and to the serious danger from fire which its highly combustible construction involves. The very valuable mineral collections of the University, including one of the largest collections of meteorites in the world, is thus greatly imperiled, although everything has been done of which circumstances would admit to isolate the collection from the rest of the building by means of brick partitions and iron doors. A movement has been started to procure safer accommodations for the collections in connection with the University Museum, and it is hoped that the friends of the University will furnish the means for the additional buildings required, before the valuable acquisitions, which represent the accumulations of a long life of strenuous effort, suffer the fate of the collections of Professor Shepherd of Amherst College under very similar circumstances. The space now occupied in Boylston Hall by the mineral collections is greatly needed for additional laboratories and class-rooms.

There is also a pressing need of a much larger lecture-room to accommodate the rapidly increasing audiences which attend the lectures on Elementary Chemistry. The present lecture-room was designed for a class of 200; and in 1859 — the date of the erection of Boylston Hall — this accommodation was thought ample for all future needs. By crowding together the settees, fifty additional sittings — such as they are — have been provided; but these seats are very uncomfortable except for undersized men; and the air space could not be increased. In this room there constantly collects at the elementary lectures on Chemistry an audience of over three hundred persons. Chairs are brought in until the space around the lecture-table is jammed; but still many of the students are compelled to sit on the steps of the aisles or to stand in the hall. The air in the room at the close of the lecture is necessarily in a horrid state; and there can be no better evidence of the changed attitude of the students towards their instructors than that strict attention is given and perfect order preserved under such conditions. The lectures would long since have been transferred to one of the larger lecture-rooms of the University, were it not impracticable to give the course effectively at any distance from the base of supplies. For this reason it is important, in order to meet the growing needs of the University, to provide in connection with the Chemical Laboratory a lecture theatre capable of seating comfortably at least 600 students. On account of the construction of Boylston Hall there is no space within the present building where a room of this size could be obtained, but it would be possible to provide the accommodation by building a one-story apsis running back from the centre of the building towards Harvard Street. Such an addition could be made architecturally harmonious, would sacrifice only one of the less important rooms of the building, and could be brought into simple working relations with the rest of the Laboratory. Such a theatre would be entered from the existing hall, and, like the present lecture-room, would be useful for public meetings and illustrated evening lectures of various kinds.

The scientific work of the Laboratory was prosecuted during the last year with the usual vigor, although much of it was the carrying out of investigations begun before. The following publications were issued by members of the Laboratory staff: —

1. Ueber Zinkoxyd Natron. A. M. Comey und C. Loring Jackson. Berichte der deutschen chemischen Gesellschaft.

2. Ueber ein Additionsprodukt von Tribromdinitrobenzol und Tetrabromdinitrobenzol. C. Loring Jackson und G. D. Moore. Berichte der deutschen chemischen Gesellschaft.

3. Ueber Anilintrisulfosäure. G. T. Hartshorn und C. Loring Jackson. Berichte der deutschen chemischen Gesellschaft.

4. Ueber die Einwirkung von Natriummalonsäureester auf Tribromdinitrobenzol. C. Loring Jackson und W. S. Robinson. Berichte der deutschen chemischen Gesellschaft.

5. On the Action of Sodium Malonic Ester on Tribromdinitrobenzol. C. Loring Jackson and W. S. Robinson. Proceedings of the American Academy. Vol. xxiv.

6. On Sodium Zincates. A. M. Comey and C. Loring Jackson. Proceedings of the American Academy. Vol. xxiv.

7. On Sulphopyromucic Acids. Henry B. Hill and Arthur W. Palmer. Proceedings of the American Academy. Vol. xxiii.

8. Notiz ueber die Furfuracrylsäure. Henry B. Hill. Berichte der deutschen chemischen Gesellschaft, xx. 3359.

9. The Relative Values of the Atomic Weights of Hydrogen and Oxygen. J. P. Cooke and T. W. Richards. Proceedings of the American Academy. Vol. xxiii.

10. Additional Note on the Relative Values of the Atomic Weights of Hydrogen and Oxygen. J. P. Cooke and T. W. Richards. Proceedings of the American Academy. Vol. xxiii.

11. Further Investigation of the Atomic Weight of Copper. T. W. Richards. Proceedings of the American Academy. Vol. xxiii.

12. The Crystalline Structure of the Cohahuila Irons. Oliver W. Huntington. Proceedings of the American Academy. Vol. xxiv.

JOSIAH P. COOKE, *Director.*

THE JEFFERSON PHYSICAL LABORATORY.

To the President of the University:

Sir, — As Director of the Jefferson Physical Laboratory I have the honor to present the following report for the academic year 1887–88: —

A course of experimental lectures on Electricity, Magnetism, Electro-Magnetism, and Magneto-Electricity was given by the Director to the Freshman class. These lectures were also attended by 41 Special Students and 16 members of higher classes. The examination on the lectures was taken by 300 students, of whom 50 obtained the rank of *A*, 76 the rank of *B*, 103 the rank of *C*, 62 the rank of *D*, and only 9 failed to pass. Course *B*, on Experimental Physics, with one laboratory exercise a week, was given by Dr. Hall and was taken by 80 students. Course *C*, on Measurements in Mechanics, Sound, Heat, Light, Electricity, and Magnetism, with lectures and laboratory work, was given by Dr. Whiting and was taken by 34 students. Course 1, on the Principles and Methods of Physical Measurement as applied to Mechanics, Heat, and Light, was given by Dr. Hall and was taken by 5 students. Course 2, on the Principles of Physical Measurement as applied to Sound, Electricity, and Magnetism, was given by Dr. Whiting and was taken by 3 students. Course 6, on Experimental Physics, with laboratory work for advanced students, was given by Professor Trowbridge and was taken by 4 students. Course 7, on Mathematical Physics as developed in Maxwell's Electricity and Magnetism, was given by Professor Trowbridge and was taken by 2 students. Course 9, on the Theory of the Electrical Potential, with laboratory work, was given by Professor B. O. Peirce and was taken by 3 students. The total number of students in the elective courses (exclusive of those not Freshmen or Special Students who attend the Freshman lectures) was 133, a gain of 21 over last year, viz. Seniors 21, Juniors 14, Sophomores 25, Freshmen 40, Special and Scientific Students 29, Graduates 4. As a few students took more than one elective in Physics, the total number of persons in the laboratory was a little less than 133.

In my last report I mentioned the difficulties in the way of undergraduates who attempt original research. The most promising, however, are encouraged to try their hands at it, even if it does not lead to valuable scientific results. Mr. H. E. Hayes, Senior, presented a thesis on the thermopile, used by Melloni and Tyndall in their researches on radiant heat. Its use requires a delicate galvanometer, and, when the pile has many junctions, it is sluggish in its response. Langley found it inadequate for his delicate work on solar and lunar radiations and substituted the bolometer. This works by the variation of electric current in thin metal on change of temperature. Recently C. V. Boys improved on Melloni's method by combining the thermopile and galvanometer in a single instrument. A coil of one or two turns of copper-wire, with its ends joined by a compound of antimony and bismuth, was deflected when placed in a strong magnetic field. Mr. Hayes used bismuth and an alloy of antimony and lead. The magnetic field was produced by an electro-magnet with coarse wire charged by six Bunsen-cells. He found that one turn of wire in the suspended coil produced the maximum effect. He obtained a formula from which he inferred that the instrument attained its greatest delicacy when the resistances of the coil and the thermo-electric junction were equal. The instrument would not be suitable for such work as Langley's since it requires a fixed position.

Mr. W. J. Bliss, Senior, prepared a thesis on the electromotive force of cells in which amalgams of sodium or potassium take the place of one of the metals. His subject was prompted by the suggestion that the Western alkali-deposits might be converted into a source of electricity for storage-batteries by sending an electric current through a cell containing the salt in solution over mercury, and using the substance thus polarised as a source of electricity. He made the amalgam by transmitting the current from two Bunsen-cells through soda or potassa and deriving sodium or potassium combined with mercury. The current he obtained with these metals was sent into a condenser and measured by a ballistic galvanometer, in comparison with the standard-cell of Latimer Clark. Wheatstone had experimented on amalgams, comparing the current from them with a standard-cell by means of his rheostat. Mr. Bliss concluded from his experiments that these amalgams would not be useful as a portable source of electricity.

An investigation was prosecuted during the winter upon the effect of the magnetic and electrostatic field on the velocity of light, with special reference to the electro-magnetic theory of light. The relation between light and electricity has become one of the most interesting questions in Physical Science. Mathematical theory indicates a close connection between light, heat, and electricity. Experimental evidence is needed to confirm the deductions from theory. If it could be proved that light, in passing through a space filled with lines of magnetic or electrical force, is modified not only in its direction of vibration but also in its velocity, a test of the correctness of mathematical deductions would be at hand. Mr. D. W. Shea, a graduate student, who has been engaged upon these experiments, believes it possible to assign a limit above which it can be affirmed that no effect of magnetism upon light is possible. The apparatus employed is similar to that used by Professor Michelson in studying the effect of the motion of the earth upon the luminiferous ether. A direct measure of the effect of magnetism upon the index of refraction of glass has also been made by Mr. Shea. These experiments are still in progress. Mr. Shea was also engaged on a study of the effect of magnetism upon phosphorescence. The results of the experiments were negative. The vibrations of energy, constituting the phenomenon of phosphorescence, seem to take place unimpaired under strong magnetic influences.

An investigation upon the use of a peculiar form of air-thermometer for the measure of currents of electricity was made by Mr. Charles Nutt of the Sophomore class. On account of the self-induction of electro-dynamometers it is difficult to use these instruments in measuring alternating currents of electricity. By sending the currents to be measured through small coils, immersed in equal air-chambers, and measuring the expansion of the air due to the heating effect of these currents, they can be measured without the error which comes from self-induction. This method promises to be a valuable one for the measure of the efficiency of electrical transformers, which are now coming into use in electric lighting.

Besides this original work, all of which has been done by the students of Professor Trowbridge under his direction, he has published three valuable contributions from the Jefferson Physical Laboratory in the Proceedings of the American Academy. One was by Mr. J. C. B. Burbank of the Junior class on the photography of the least refrangible rays of the solar spectrum. His object was to test the efficiency of the cyanine-stains when applied to the photographic plate. Some of his experiments were made with a flat Rowland grating having 17,000 lines to the inch; others with a concave grating having 14,000 lines to the inch and a radius of curvature of 21½ feet. The spectrum was received on a lens and camera. No difficulty was found in photographing to the limit assigned by Abney to the diffraction-spectrum. Between wave-lengths 7100 and 8000, fifty-two lines were counted where Abney records only twenty-four. Another contribution was by Professor Trowbridge and Mr. W. C. Sabine, a graduate student, on the wave-lengths of metallic spectra in the ultra-violet. Questions of Physics and Astronomy are in the air, which demand increased accuracy in the measurement of the wave-lengths in gaseous and metallic spectra. Within the region of the visible red and violet, the solar spectrum can be used to identify metallic lines and find their wave-lengths. The difficulty arises in the case of wave-lengths too large or too small to be seen or photographed in the solar spectrum. After examining the methods of other observers, the authors of this paper conclude that the concave grating of Rowland best answers all the conditions of the problem. The metal was burned in the electric arc-light and also in the spark from a battery of Leyden jars. The conclusion was reached that the wave-lengths of iron in the sun and iron burned in the electric light or spark agreed within one-hundredth of a wave-length. The paper concludes with a table in which the new results are compared with the best of other observers. The third contribution published was also by Professor Trowbridge and Mr. Sabine, on the selective absorption of metals for ultra-violet light. Metallic surfaces of gold, platinum, tellurium, palladium, copper, silver, and steel were deposited on glass by electro-chemical action. It was found that all these metals, though of different colors, reached the same limit in their capacity of reflecting the ultra-violet rays. Hence it was safe to conclude that the metallic surface on which the lines of the diffraction-grating are ruled does not determine the limit of the shortest waves that can be photographed. This limit may be looked for in the sensitive emulsion with which the photographic plates are coated. Dr. E. H. Hall has published in the American Journal of Science two papers describing the experiments which he has been making, with the help of a few advanced students, on the displacement of the equipotential lines of a current when placed in a strong magnetic field, produced by the large diamagnetic apparatus of Ruhmkorff.

Professor B. O. Peirce and Mr. R. W. Willson have been investigating the charge which is taken up by a condenser when it is connected with a battery for a very short time. For this purpose they have constructed and studied several kinds of ingenious apparatus intended to maintain electrical contact for intervals of time, capable of accurate measurement and varying from one second to one fifty-thousandth of a second. With the apparatus at first designed anomalous results were obtained when the duration of contact approached its minimum. They were thus led to the construction of a new form of apparatus which they expected to be free from the supposed source of error. Similar results obtained with the last instrument were attributed to defects in design. Recently published researches, however, have suggested that the true explanation of the facts observed may lie in the peculiar nature of the electrical discharge. This question they expect to take up the present year. Meanwhile their work upon the "short-time-charge" is going on satisfactorily, but has not yet reached a stage where they wish to make any statement of their conclusions.

In the spring Mr. Wendell Goodwin, of the class of 1874, presented to the laboratory the Telephone Collection exhibited in November, 1887, at New York, in the historical collection of the American Institute Electrical Exhibition. It consists of 50 instruments and could not probably be duplicated, as some of them are originals. ;The appliances of the department for teaching and advancing physical science are steadily increasing. With the assistance of Dr. Gibbs, I have prepared a catalogue of the Rumford apparatus, chiefly on light and heat, which comprises 223 entries. The catalogue of general physical apparatus which I received from my predecessor, Professor Farrar, in 1836, contained less than 300 articles. This collection has grown so as to contain more than 1100 articles of apparatus, many of them adapted to original research: and all are registered in a new card-catalogue. The elementary laboratories are provided with suitable instruments for beginners, duplicated many times to accommodate the large elementary electives: which, in turn, add to the income of these laboratories by the increased fees.

During the year valuable additions have been made to the physical apparatus, for the illustration of old laws or for researches on new lines, by special appropriations of the Corporation and so much of the income of the endowment-fund as could be saved from the current expenses. New cases have been placed in the apparatus-rooms to accommodate the increasing collection. During the long vacation the janitor has painted the brick walls on the second and third floors of the hall and in one of the recitation-rooms, improving the appearance and adding to the light. A double room in the basement has been well equipped for mechanical work. It is furnished with a powerful lathe for heavy work and a smaller one for light work. Shafting has been attached to the ceiling and connected with the shafting of the engine-room, and either of the lathes can be operated by the steam- or gas-engine. A liberal supply of tools has been purchased and more will be added as the necessity arises. A friction-brake and an Emerson power-scale have been placed in the engine-room to assist in the teaching of the elective on Dynamos and Heat-engines. A course of four lectures (open to all members of the University and the public) was given in the second half of the year as follows: On American contributions to Spectrum-analysis, by Professor Trowbridge; on Practical Mechanics, illustrated by Bridge-building, by Professor Chaplin; on Matter and Motion, by Dr. Whiting; and on the Electric Light, by Dr. Hall. In this way the necessity arose for providing the lecture-room with six chandeliers, sixteen burners in each, with a special battery, electrical attachments, wires, and buttons for controlling the light at pleasure during the lectures.

On Sept. 1, 1887, there was an unexpended balance in the income of the endowment-fund, saved during the three previous years, of $3367.73, with interest on the same to Aug. 1, 1888, of $168.40. The large expenditures for the improvements described in this report have reduced this balance to $1718.31. This sum is at the disposal of my successor, in addition to the ordinary income of $4350. If the current expenses of the laboratory are kept within the normal income, and what remains of the accumulation is devoted to improved equipment as the necessity arises, the laboratory will enjoy a permanent revenue, if not in money, in increased facilities for instruction.

Hitherto it is understood that the cost of all repairs upon the building have been charged to the income of the endowment-fund. It will appear from previous reports that some of these charges were not inconsiderable: as, for example, that for repacking all the windows. Inasmuch as on Sept. 1, 1885, an unexpended balance of the building-fund (amounting to $295.29) was transferred to the income of the endowment-fund to close the building account, it may be assumed that the income of the endowment has not hitherto suffered seriously by expenditures for repairs upon the building. But it deserves the consideration of the Corporation whether hereafter the cost of such repairs, which will be increasing with the age of the building, should not be paid from the general funds of the College.

JOSEPH LOVERING, *Director.*

THE OBSERVATORY.

To the President of the University:

Sir, — The income of the Observatory has been greatly increased during the last two or three years. The amount is such that astronomical science should be materially advanced by its proper expenditure. To secure this end so far as possible the field of work of the Observatory has been widened, as will be seen in the following report. The coöperation of other institutions and individuals has been secured, especially in the department of meteorology, in such a way as to obtain results which would be impossible for a purely local institution. Daily experience in the industrial arts shows that large sums of money can be expended much more economically than small. It is hoped that the work now in progress will show that the same principle is applicable to a scientific institution. If this is true, a brilliant future may be expected for this Observatory from its many friends interested in advanced scientific work.

As will be seen below, Mrs. Draper's continued liberality permits the Henry Draper Memorial to progress rapidly, and the first large research in this department is now approaching completion. The Boyden Fund has given us more definite plans for a mountain observatory, while the Paine Fund, nearly unrestricted in its conditions, aids every portion of the work of the Observatory. Meteorological observations, hitherto somewhat restricted, will now be greatly extended by the liberal coöperation of Mr. A. Lawrence Rotch, of the New England Meteorological Society, and of other observers. This increase of work renders the need of a new building, pointed out in previous reports, still more urgent; but for this purpose the funds mentioned above are not available. Not only is the present space entirely inadequate for the large corps of assistants now employed, but what is more important, protection from fire is urgently needed. The instruments of an observatory are delicate, costly, and easily destroyed by fire. But the expense of replacing the manuscript of the observations made with them would be far greater, and would not be covered by the insurance. The value of the observations, according to this test, would often be five or ten times that of the instruments with which they were made.

OBSERVATORY INSTRUMENTS.

East Equatorial. — No alteration has been made during the year in the condition or appliances of this instrument. The observations for which it has been employed are as follows: The number of eclipses of Jupiter's satellites photometrically observed is 27, making in all 408; the comparison stars of 17 variables, each set usually upon two or three dates, have been observed with the modified wedge photometer described in the last report; the same photometer has been used in the observation of six asteroids, (3) Juno on 39 dates, (4) Vesta on 10, (7) Iris on 10, (8) Flora on 9, (11) Parthenope on 4, (82) Alcmene on 16; and zones of DM. stars have also been observed with the wedge photometer on 16 dates. Mr. Wendell has observed the positions of the following comets: 1887 V. on 2 dates, and the comets discovered by Sawerthal, Brooks, and Barnard, on 6, 8, and 3 dates respectively; also the asteroid (80) Sappho on 8 dates. In order to facilitate the decision of questions relating to the identity of stars observed with the meridian circle in the zone from + 50° to + 55°, 148 observations of 116 stars have been made with the Equatorial.

Meridian Circle. — The reduction of the observations made with this instrument by Professor William A. Rogers continues under his supervision. The catalogue of the zone from 50° to 55° of north declination is completed as far as $12^{h.}$, and the copy is now in course of preparation for printing. The revision of the remaining portion of the catalogue is so far advanced that no delay will occur in the preparation of additional copy. The reduction to the epoch 1875.0 of the places of stars belonging to the catalogue, which occur in other authorities, has been completed and tables for the reduction of different catalogues to the fundamental system have been constructed. The corrections required on account of proper motion are now in course of investigation. For the observations made in the years 1879 to 1883 on the absolute places of stars, the means of the times of transit and of the circle readings have been computed and entered in the proper books.

The zone from — 9° 50′ to — 14° 10′ was assigned to this Observatory as its part in the revision of the Southern Durchmusterung mentioned in the last report. The number of stars to be observed in this zone is 7959. Observations were begun on April 26, 1888, and at the close of October had been made on 56 evenings. The total number of observations was 2106, some of which, however, will probably be unavailable, owing to the failure of the chronograph or other imperfections in the record. Of these observations, 105 relate to circumpolar stars, 354 to fundamental stars, 1549 to zone stars, and 42 to stars incidentally observed, more particularly to a series of comparison stars for the asteroid Sappho, observed at the request of Mr. R. Bryant of London. The telescopic observations have been made by Professor Searle; the microscopes were read by Mr. T. F. White until the end of September, and since then by Mr. J. A. Dunn. The chronograph sheets have been read by Mr. Dunn, who has made some progress in the further reduction of the work.

Meridian Photometer. — The work planned for this instrument began early in 1882 and was completed September 29, 1888. The total number of series of observations was 1067, including 266,912 photometric comparisons. Of these, 163 series and 58,256 comparisons were made since November 1, 1887. The principal investigation made with this instrument was the determination of the brightness of stars of the ninth magnitude in zones 20′ in width at intervals of 5° from the north pole to the declination — 20°. Stars from the sixth to the eighth magnitude in wider zones were also included. Among other objects measured were the 722 stars adopted as standards of magnitude for the Uranometria Argentina; those observed by Flamsteed and not included in the Harvard Photometry; those of the latter catalogue which were discordant, and stars of the ninth magnitude and brighter used as comparison stars for variables. Numerous variables, suspected variables, planetary nebulae, stars having peculiar spectra, asteroids, etc., were also included in this work. Stars near the northern and southern horizon have been observed with the object of determining the law of atmospheric absorption to within two degrees of the horizon. The instrument will now be sent to Peru, where the Harvard Photometry will be extended to the south pole. A similar investigation will also be made of fainter stars to the ninth magnitude in zones at intervals of 5° from —25° to —90°.

Horizontal Telescope.—All stars of the sixth magnitude and brighter visible in Cambridge were measured with the first meridian photometer in 1879 to 1882. Nearly one hundred thousand comparisons were made and their results, published in the Harvard Photometry, established a photometric scale for the bright stars. This scale has been extended from the sixth to the ninth magnitude by the meridian photometer mentioned above. It is now proposed to continue this scale from the ninth to the fourteenth magnitude by a third still larger instrument of somewhat similar form. A telescope having an aperture of twelve inches and a focal length of seventeen feet has been mounted horizontally pointing to the west. A mirror placed in front of the objective reflects into it in any star within an hour of the meridian. An auxiliary telescope having an aperture of five inches reflects the Pole star into the field for comparison with the star to be measured. Although intended primarily as a photometer, this telescope may be used for almost any other purpose. A small building erected around the eye-piece protects the observer and may be heated in winter so that he can work in comfort.

Smaller Instruments.—The difference of longitude between Smith College Observatory, Northampton, Massachusetts, and the Observatory of Harvard College was determined last summer by Miss Byrd, Teacher of Astronomy at Smith College, and Miss Whitney, Professor of Astronomy at Vassar College. The observations at Cambridge were made with the Portable Transit Instrument of this Observatory, and occupied ten evenings.

The Portable Transit has also been used during the year by Professor F. H. Bigelow, of Racine, Wisconsin, and Mr. W. P. Gerrish of this Observatory, in experiments upon the application of photography to transit observations.

The reappearance from eclipse of Jupiter's first satellite was photographically observed on July 24, 1888, by means of the Bache telescope. Successive exposures at intervals of 10ˢ showed that the increase of brightness in the satellite could be accurately measured on the photographs. and it is intended to bring this method of observation into regular use.

The lunar eclipse of January 28 was observed in various ways, and and the results of the observations were published in Volume XVIII., No. IV., of the Annals of the Observatory. When the eclipse was central, the ratio of the actinic light of the Moon to that of the uneclipsed Full Moon was found to be 1 to 1,400,000. A photographic search for a lunar satellite made it seem probable that no such body larger than 200 metres in diameter exists.

Preparations were made for similar observations of the lunar eclipse of July 22, 1888, but cloudy weather prevented the proposed work.

HENRY DRAPER MEMORIAL.

The Second Annual Report of this department of the Observatory details the progress made up to March 1, 1888. The present condition of the various investigations undertaken is as follows. A catalogue has been prepared of the spectra of 10,875 stars covering the entire sky north of — 25°. The eight-inch Bache telescope has been used for this work. 633 plates have been taken and 27,953 spectra have been examined. The type of spectrum is given in each case and in about six thousand cases additional lines are visible and have accordingly been described. The photographic intensities of the spectra have also been measured, and we shall thus have for the first time a photometric measure of the stars by which those of different colors may be compared. All of the work described above is completed. The first draft of the Catalogue has been prepared, including the place of each star for 1900, its designation and magnitude in various catalogues, its photographic brightness, and the description of each spectrum. The checking, examination of discordant cases and preparation of the final copy for the printer will still occupy severa months. The photographs required for the second investigation on the spectra of the fainter stars would probably now be completed, at least for the northern stars, but for the unusual cloudiness of the last few months. It is expected to complete them during the coming winter and then to send the instrument to Peru, where both the investigations named above will be extended to the southern stars, thus rendering them complete for the entire sky. The detailed study of the spectra of the brighter stars with the 11-inch Draper telescope has been extended by the use of plates stained with erythrosin. The sodium line D in these spectra has thus been photographed as a double line. A catalogue has been formed of the lines in some of the brighter stars. In Sirius the lines, except those due to hydrogen, are very faint. But nearly four hundred of them have been measured in different photographs of this star. Fifteen are recorded between the lines H and K. A beginning has been made of the study of the spectra of the variable stars, but this work can probably be better done with the 28-inch mirror. The latter instrument is now mounted and experiments have been in progress with it for several months. The images show good definition, but the apparatus for producing the spectra has not yet given entirely satisfactory results.

Boyden Fund.

The work done by means of this fund has been continued in the manner indicated in the previous report. As circumstances appeared to favor an earlier expedition to Peru than was at first contemplated, preparations for it were begun and the second expedition to Colorado, suggested in the last report, was postponed. The mountains of Colorado are comparatively so accessible as to invite occupation for astronomical purposes if their climatic conditions prove sufficiently favorable. In order to determine this question, the Boyden Fund has been partially employed in assisting the progress of meteorological observation in Colorado. The kind coöperation of the Chief Signal Officer, General A. W. Greely, has enabled an arrangement to be made in accordance with which the long series of meteorological observations made at the summit of Pike's Peak has been furnished for publication in the Annals of the Observatory. This work is now far advanced. The continuance of the observations to the summer of 1888 was also assured by assistance from the Boyden Fund.

The meteorological station on Mt. Lincoln, mentioned in the last report, was discontinued after some months, but that on Mt. Bross has been continued; and assistance has been given, with the aid of the kind intervention of Professor Loud, to other meteorological work in Colorado, especially by means of self-registering instruments. Assistance has also been given in the publication of the Bulletin of the Colorado Metereological Society.

Arrangements have been made for beginning meteorological work at several places in Peru. This work is under the general supervision of Mr. V. H. MacCord, to whom the Observatory is much indebted for his kind assistance. Mr. W. H. Cilley, of the Oroya Railroad, has also kindly interested himself in furnishing highly valuable information and in securing observations.

The investigation of the clearness and steadiness of the air at Cambridge has been continued by the photographic methods mentioned in the last report; these are as follows: photographs of the trails of the spectra of bright stars, photographs of the trails of stars near the North Pole and near the horizon, and photographs of the sky at different distances from the sun. The 13-inch and 8-inch telescopes mentioned in the last report were mounted early in the year, and the first of these instruments has been kept in nearly constant use since then. Eleven hundred photographs have been taken of a variety of objects to show what results may be expected under the atmospheric conditions existing at Cambridge.

Photographs have been taken of 112 double stars whose components are two seconds or more apart and either of them as bright as the seventh magnitude. The relative brightness of the components will be determined as well as their positions. The stars have also been allowed to trail over the plate, and this gives an excellent test of the steadiness of the air. Among other investigations made with this instrument are the determination of the actinic albedos of the Moon and planets and the absorption towards the limb of the planet Jupiter. Photographs were obtained of the outer satellite of Mars, and of all the satellites of Saturn and Uranus except Mimas. It was shown that no undiscovered satellite of Saturn existed revolving in an orbit between Enceladus and Iapetus, unless it was more than a magnitude fainter than Hyperion. Probably no such satellite exists outside of Iapetus. Charts were constructed of the region near the North Pole, of the Pleiades, and of some other clusters and nebulae. A study was also made of various lenses for enlargements and of various camera lenses. Sundry other photographic investigations have also been carried on. The total number of photographs taken in this department of the Observatory during the year is about thirty-five hundred.

MISCELLANEOUS.

Meteorology. — For many years after its establishment, meteorological observations formed an important part of the work of this Observatory. Its statutes define one of its objects to be coöperation in meteorological investigations. In recent years the United States Signal Service has so fully provided for this work that less attention has been paid to it here. By the coöperation of the New England Meteorological Society, the observations of the one hundred and fifty members of that society will hereafter be published in the Annals of this Observatory. We shall thus be enabled to exhibit the climatic conditions of a large part of New England. An active meteorological observatory, fully equipped with the best self-recording instruments, has recently been established on Blue Hill. The location is exceptionally favorable, as it is the highest point of land in eastern Massachusetts and the highest point near the sea from Maine to Florida. By the liberal aid of the owner, Mr. A. Lawrence Rotch, these observations will hereafter appear in our Annals, and the eventual consolidation of the two institutions is contemplated. It therefore appears to be advisable to restrict the meteorological observations at Cambridge to such as will make the early observations a part of a continuous series. Other important observations are being made with the aid of the Boyden Fund, as has been stated above.

Variable Stars. — Messrs. Parkhurst, Eadie, and Hagen have continued their coöperation with this Observatory in collecting fresh material for the study of the variable stars. Mr. Parkhurst's preliminary series of observations on the variations of the asteroids, mentioned last year, has been published as No. III. in the collection of separate memoirs which will constitute Volume XVIII. of the Annals of the Observatory. Communications which will aid in the construction of the Index to Observations of Variable Stars, undertaken last year, have been received from the following foreign observers: Mr. T. W. Backhouse, of Sunderland, England; Messrs. Joseph Baxendell and Joseph Baxendell, Jr., of Southport, England; Rev. T. E. Espin, of Wolsingham, England; Mr. J. E. Gore, of Ballysodare, Ireland; Mr. George Knott, of Cuckfield, England; Major E. E. Markwick, of Queenstown, Ireland; Mr. C. E. Peek, of Lyme Regis, England; Mr. J. Plassman, of Warendorf, Germany; Professor Safarik, of Prague, Austria. Two large series of earlier unpublished observations have also been obtained, and it has been thought best to delay the publication of the Index above mentioned until these series could be received and utilized. The first series consists of observations by the late Professor E. Heis, of Münster, Germany. The records of these observations were transmitted by the family of Professor Heis to the Rev. J. G. Hagen, S. J., who has kindly communicated them to this Observatory. The second series contains the observations of the late Dr. J. F. J. Schmidt, preserved in manuscript at Potsdam. Professor H. C. Vogel, Director of the Potsdam Observatory, has kindly directed the preparation of a copy of these observations for use in the proposed Index. The printing of the Index has been begun, and it is hoped that the work may soon be distributed.

Time Service. — The standard time signals have continued to be sent by the Ballou clock No. 103. The average amount of its error at the time of observing star transits has been 0.32 seconds; the average interval between the times of these determinations being 2.4 days. The average error of the clock at 10 A.M. has been 0.33 seconds, while the average change in the daily rate from each day to the next has been 0.18 seconds. The hour, 10 A.M., is a convenient representation of the daily performance: any other hour would give practically the same result.

The Boston Time Ball was dropped automatically by telegraph at noon 286 week days. The corresponding figure for the preceding year (omitted from the previous report) was 289 week days. The practice of dropping by hand when the telegraphic connections fail has been discontinued. The number of such failures is still greater than it ought to be and measures are now being taken to reduce it.

There is no record of dropping at the wrong time during the two years. For one day this year the record is uncertain, however; while on one day last year the ball started prematurely, but was caught part way down, raised, and then slowly lowered by hand as a sign that no reliable dropping had occurred.

Telegraphic Announcements. — The telegraphic distribution of astronomical intelligence has been continued during the year under the management of Mr. Ritchie. Announcements have been made of the discovery of nine asteroids and five comets, concerning which twelve cable messages have been received and two have been despatched. The respective numbers of telegrams circulated in this country concerning asteroids and comets are 109 and 173.

Publications. — The increase of Observatory funds has permitted the publication in the Annals of much material which would otherwise have remained unpublished or have been communicated in an abbreviated form to periodical works. Hence the number of these contributions to periodicals is now comparatively small.

Arrangements have been made with several other institutions for coöperation in the publication of some of their observations. The publication of the Pike's Peak observations of the U. S. Signal Service has been mentioned in describing the work of the Boyden Fund. The Bulletin of the New England Meteorological Society for the successive months of 1888 has also been printed with the aid of the Observatory, and will ultimately appear as part of its Annals. The publication of the observations made in 1887 at the Blue Hill Meteorological Observatory is also in progress in pursuance of the system of coöperation above described.

The complete publications of the year are as follows: —

Forty-second Annual Report of the Astronomical Observatory of Harvard College.

Henry Draper Memorial. Second Annual Report of the Photographic Study of Stellar Spectra conducted at the Harvard College Observatory. Edward C. Pickering, Director. With two plates. Cambridge, 1888. Reprinted in Nature, xxxviii. 306, and Memorie della Società degli Spettroscopisti Italiani.

Boyden Fund. Circular No. 3. Observations of Temperature and Rainfall.

Annals of the Astronomical Observatory of Harvard College. Volume XVIII. Nos. III., IV., V., entitled respectively Photometric Observations of Asteroids, by Henry M. Parkhurst; Total Eclipse of the Moon, January 28, 1888; and Total Eclipse of the Sun, August 29, 1886.

Comet-Meteor Radiants. By O. C. Wendell. Astronomische Nachrichten, cxviii. 175.

Occultations observed during the Lunar Eclipse of January 28, 1888. By O. C. Wendell. Ibid. cxviii. 309.

Observations of Planet (80) Sappho. By O. C. Wendell. Ibid. cxix. 299.

Orbits of Meteors. By O. C. Wendell. Sidereal Messenger, vii. 37.

Orbit of Comet 1888 *a* (Sawerthal). By O. C. Wendell. Ibid. vii. 216.

The Apparent Instability of Stars near the Horizon (Sternschwanken). By Arthur Searle. Astronomische Nachrichten, cxx. 109.

EDWARD C. PICKERING, *Director.*

THE MUSEUM OF COMPARATIVE ZOÖLOGY.

To the President and Fellows of Harvard College: —

During the past year the following courses of instruction have been given at the Museum: —

A course in Biology, by Professor Farlow and Dr. Ayers.

A course in Zoölogy, by Dr. Ayers, who had charge of the general Biological Laboratory, assisted by Mr. G. H. Parker.

General Lectures on Zoölogy by Professor Mark. A course in Microsopic Anatomy and a course of Embryology were also given by Professor Mark. In the Laboratory work he was assisted by Mr. G. H. Parker.

Professors J. D. Whitney, Shaler, and Davis and Mr. J. E. Wolff gave the usual courses in Geology, Palaeontology, Physical Geography, and Petrography.

The Assistants of the Museum, Professors Hagen and Faxon, Dr. Slade, Mr. Garman, Mr. Brewster, Professor Hyatt and Dr. Fewkes have all spent more or less time in supplying material and information to special students in their various departments. A number of students interested in Marine Invertebrates accompanied Dr. Fewkes on several dredging expeditions.

A number of additions have been made to the equipment of all our Laboratories.

Excellent progress has been made since the spring on the extensive addition to the Museum Building, now well under way. Adjoining the Natural History Laboratories, ample room will be provided thoroughly to fit up the Geological and Geographical Departments. The money necessary for this section of the University Museum has been advanced by the Corporation to the Museum. Both this section and the large addition to be devoted to the Botanical Department will be under cover before cold weather.

Owing to the uncertainty of my movements during the past summer I was unable to invite to the Newport Laboratories the class of students who usually avail themselves of its facilities. Messrs. Field, Eigenmann, Woodworth, and Parker were, however, able to avail themselves of the Museum Tables at the United States Fish Commission Station at Wood's Holl. Professor Faxon occupied a table at the Newport Laboratory for a time, devoting himself mainly to the Embryology of the Macrura; my own time was also given to the same subject, and to the development of Pelagic Fishes. A considerable amount of material for study was supplied to the Museum from Newport.

I may mention the following persons to whom material for study has been sent. Dr. Baur, Dr. Boas, Dr. Joubin, Messrs. Ridgway and Scudder, and Professor Giard. A number of exchanges have also been made.

We have continued to send material from our American fossil Vertebrates to Professors Scott and Osborne. A number of specialists have, as usual, made use of our collections and carried on their work for the time in the Museum building. I have been obliged to refuse a number of applications for material to be sent away from Cambridge. Applications specially in Entomology, Palaeontology, and Conchology have become so frequent that, if granted, the whole time of the Assistants in the Department would be given to selecting and replacing the material requested for study, leaving them no time to carry on their regular work. As our staff is not large enough to meet this demand, we shall be obliged in the future to limit the export of our material to single specimens. The larger collections will have to be studied at the Museum.

The principal accessions of the Museum have been exchanges with the Stockholm Museum and the British Museum. From the Smithsonian we have received a fine skeleton of the Great Auk, from

Funk Ils, admirable mounted by Mr. Lucas, and from Dr. H. J. Bigelow a number of monkeys. But by far the most valuable accession is the first instalment of the Hume Collection of Indian Birds, selected for the Museum, in accordance with the request of Mr. Hume, by the officers of the British Museum. Professor Flower kindly allowed Dr. Sharp to select from the duplicates the set intended for us by Mr. Hume, and this first instalment has reached us in excellent condition.

I should also mention a most excellently preserved collection of Insects, mainly Lepidoptera, presented to us by the Messrs. Treat of Lawrence, Mass.

From Professor Ward we have continued such purchases as were needed to fill gaps in our Exhibition Rooms.

Professors Osborne and Scott have returned to us a large part of the fossils sent them for study. Dr. Dobson has returned the Shrews sent him for examination; and the bulk of our collection of Annelids, a part of which had been sent to the late Professor Kefertein, has been returned to us by Professor Ehlers, carefully determined, and forms a most valuable addition to our typical collections. The Annelids from the Pourtalès dredgings off Florida have also been returned by Professor Ehlers, the types of his great work on the "Florida Annelids."

The condition of the collections continues to improve, and a number of gaps in our Exhibition Rooms have also been filled.

I wish that I could also speak of some like progress in the arrangement of the Palaeontological Exhibition Rooms. The system proposed for the collections is unique, and the result, I have no doubt, would be a most interesting addition to the rooms open to the public. A sum of at least fifteen thousand dollars would be required to complete the arrangement of the four rooms devoted to the Palaeontological exhibit. At present the public can form no estimate of the value of our fossil collections, which are as yet barely accessible to the Assistant in charge.

The Museum is again indebted to Messrs. Brewster, Cabot, and Slade for their interest in their respective departments. Messrs. Brooks and Jackson have also rendered valuable aid to Professor Hyatt in the arrangement of the Palaeontological Collections. Professor Faxon has kindly continued in charge of our collection of Crustacea, and has spent much time in the arrangement of the Crustacea for the Atlantic Faunal Collection.

The number of volumes added to the Library during the past year is somewhat larger than usual, being nearly 500 volumes, besides 1700 parts of volumes and pamphlets. The increase is mainly due to a number of new exchanges, and to the filling up of gaps in the series from several of the past Museum correspondents. Among the accessions to the Library, I may call attention to the purchase of Glover's manuscript, and to unpublished plates of Caverly, presented by Professor Keener. A number of institutions have received from us as complete sets of our publications as it was possible to supply, and to various Marine Zoölogical Laboratories full sets of our publications relating mainly to Invertebrates and Fishes were sent.

The publications of the Museum during the past academic year have been unusually numerous. We have published seven numbers of the Bulletin, and two volumes containing my General Report on the "Cruises of the Blake." One volume of the Memoirs, containing the Report of Professor Ernest Ehlers on the Deep-Sea Florida Annelids, has also been issued during the past year. The Museum is greatly indebted to Professor Ehlers for this exhaustive Monograph, based upon the collections of Pourtalès and of the "Blake." No less than sixty plates accompany the Memoir, and Professor Ehlers spared no pains in superintending their execution. The text was printed in German, and is a most creditable production, from the press of John Wilson and Son.

This volume of Professor Ehlers, and the two volumes of "Cruises of the Blake," had been in preparation a number of years.

The list of the Bulletins and Memoirs now under way includes an important memoir on the Genesis of the Arietidae, by Professor Hyatt; a paper on the Lateral Line of Selachians, by Mr. S. Garman, based upon material left by the late Professor Agassiz; and the completion of the Report of Mr. Dall on "the Blake" Mollusks; as well as other contributions to Zoölogy, which have already been mentioned in former Reports.

To friends of the Harvard Annex we owe the plates which accompany Miss Mayo's Bulletin, and to Professor W. D. Alexander I am indebted for copies of Maps relating to the reefs of the Sandwich Islands.

I hoped during the past winter to avail myself of the kind invitation of Professor G. Brown Goode, Acting U. S. Fish Commissioner, to join the "Albatross" at Panama, and run a line of dredgings and soundings from Panama to the Galapagos. Unfortunately, it was impossible for me to leave Cambridge, and in spite of the courtesy of Colonel M. Macdonald, U. S. Fish Commissioner, in delaying the "Albatross" at Panama, in hope that I might be able at the last moment to join her, I was obliged to abandon all idea of making the expedition. This was to me, of course, a great disappointment, as I had always hoped some time to be able to carry out such a line of dredging as that run by the "Albatross," and to become as familiar with the deep sea fauna on the western side of the Isthmus as I was already with the eastern. Colonel Macdonald was, however, kind enough to promise me the collection of those orders of Echinoderms made by the "Albatross," to which I had paid most attention. And while these collections will not have the personal interest attached to those I made on the "Blake," I hope yet to be able to carry out for some groups of deep-sea Echinoderms the interesting comparisons which have been instituted on the riparian fauna of the two sides of the Isthmus of Panama.

The Museum is also specially indebted to Colonel Macdonald for the facilities enjoyed by students of the Museum at the Fish Commission Station at Wood's Holl. It is to be hoped that the government will continue there its present liberal policy towards all students of marine Zoölogy, and that the immense resources for obtaining material may be utilized by the students and investigators attached to the Natural History Laboratories of the country. A station of the greatest importance could thus readily be organized by concerted action on the part of the colleges of the country.

In the past fifteen years I have been in the habit of supplying deficiencies for such expenditures as seemed to me essential for the rapid development of the institution. But it has now become evident that, while such a policy may have been useful in the early stages of the Museum, it has of late been rather a detriment than otherwise, as the Museum was fast coming to be regarded as my personal establishment. The demands upon my time for the administration of its affairs have become so great, that I must retire from active duty to devote myself to scientific work which I have too long neglected for the sake of bringing the Museum to the point it has reached. It is high time that I should withdraw, and that a younger man more in sympathy with the prevailing tendency of science in this country should endeavor to develop the Museum by increasing the interest of the friends of the University in its behalf. The original plans have now been so far accomplished that there remains to complete the Oxford Street façade only one section and a half, and the southwest corner piece which is to meet the Peabody Museum wing.

During the past year the expenses which I have been accustomed to meet on account of the Museum have been so far reduced, that it will hereafter be possible for the Museum to live within its income. This will become practicable as soon as the indebtedness incurred for the Geological Laboratory and its equipment is paid off. Of course this reduction will cut off expenses in many directions, — such as the purchase of collections, salaries for additional assistants, etc.; but these reductions need not interefere in the least with the efficiency of the Museum in the maintenance of its Laboratories, the care of its collections, or the liberal and regular amount of its publications. The Mineralogical Department and its collections would be admirably housed in the remaining section, and the corner piece could be devoted to such additional Laboratories and Lecture Rooms as come within the scope of the Natural History Department.

The attention of the Visiting Committee of the Overseers was called to the necessity of additional Laboratories for the Geological Department, in hope that means might be raised to erect and equip the section of the building joining the Zoölogical and Palaeontological Laboratories to the Botanical Laboratories. To avoid delay, the Corporation has advanced to the Museum the funds necessary for the erection of the shell of the connecting section. But a very considerable sum, not less than thirty thousand dollars, will be needed to equip it and make the building ready for occupancy. It will take a number of years to repay this sum from the regular income of the Museum. A further debt of fifteen thousand dollars has also been incurred to secure additional land for the Museum grounds.

ALEXANDER AGASSIZ.

CAMBRIDGE, October 1, 1888.

THE PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — The undersigned respectfully presents the Report of the Trustees of the Peabody Museum of American Archaeology for the year ending October 1, 1888.

The vacancy in the Board of Trustees caused by the death of Professor Gray, an original member of the Board, is filled by Professor Joseph Lovering, President of the American Academy of Arts and Sciences, in accordance with the Founder's Instrument of Trust. The vacancy caused by the resignation of Colonel Lyman was filled by the election of Mr. Samuel H. Scudder. The other members of the Board are the Hon. Robert C. Winthrop, Chairman, Dr. Henry Wheatland, Secretary, Francis C. Lowell, Esq., Treasurer, Stephen Salisbury, Esq., and Professor Frederick W. Putnam, the Curator. The following is an abstract made by the Curator from the report presented by him to the Trustees and herewith transmitted to the President and Fellows.

The important event of the year is the erection of an addition to the Museum building, 60 × 60 feet, in the rear of the section fronting on Divinity Avenue. This will make a building 80 ft. wide on Divinity Avenue, and 100 ft. long; or one half of the contemplated structure for the Museum on the land given by the College. This addition will give two halls 60 × 60 ft., with two galleries about 20 ft. wide, for exhibition rooms; a lecture room, 60 × 40 ft., with wall-cases for the display of a systematic collection illustrating the principal points in Ethnology and Archaeology, and also a Curator's office and laboratory. It will be a year or more before cases can be placed in the new part, but eventually the square feet of shelving under glass will be considerable more than in the first section of the building. It will then be possible to make a systematic arrangement of the collections. Two large boilers are placed in the new part for heating the building, and there is room for two more when required in the future. The steam-piping and plumbing have been entirely changed in the old part of the building.

Many additions to the Museum have been received during the year, and over two thousand entries, covering several thousand specimens, have been made in the catalogue, which now contains 46,146 entries. There are still many thousand specimens to be catalogued, consisting of a large addition to the Peruvian collection, the important collection from the great shell-heap at Damariscotta, several hundred drawers of specimens obtained from the explorations in Ohio during the past few years, and the objects from the National Museum. All these are systematically arranged; but it is now impossible, without further assistance, for the Curator to meet all the demands upon him and keep the catalogue up to date.

Several special collections have been placed on exhibition during the year. The most important of these is that given by Mr. Hilborne T. Cresson of Philadelphia, which was dredged from the mud about the remains of three groups of pile-structures in the Delaware River. This is the first time that anything resembling the pile-structures of the Swiss Lakes and other parts of Europe has been found in America. The collection is also of great interest in the evidence which it gives of the contact of distinct peoples in the Delaware Valley.

In this connection it may be mentioned that we have also received from Mr. Cresson, Dr. Metz, and Dr. Abbott palaeolithic implements from the gravel in Delaware, Indiana, and Ohio, and from the now well-known Trenton gravel. The Lockwood collection, covered by 800 entries in the catalogue, is of great importance as it contains the results of 30 years' work of a careful archaeologist in New Jersey, who was the first to explore the great Keyport shell-heaps, now entirely obliterated. An interesting collection is that from Siberia, obtained by Mr. George A. Frost during his travels in that country and containing a number of prehistoric implements of stone, bronze, and iron, as well as objects used by the people of East Siberia. A considerable collection of ethnological objects from the Eastern Arctic regions and from the tribes of the Northwest coast, much needed for comparative study, has been received from the National Museum.

By the kindness of several friends who contributed $1533 in aid of the explorations in Ohio during the past year, work in the field was resumed and important results were secured, particularly in connection with the famous Serpent Mound of Adams county. This great earthwork, with over sixty acres of land about it, is now the property of the Museum. A park, known as the Serpent Mound Park, has been laid out and opened free to the public. A unique monument of a former people is thus preserved, while various trees native to the region have been planted in the park and an extensive arboretum is thus secured in a beautiful region among the hills of Southern Ohio, which it will repay any one to visit. The money for the purchase of the land, and for the preservation of the great earth-work and mounds near by, as well as for the exploration and fitting up of the park, was obtained by subscription by ladies of Boston. The preservation of this work has had a great influence throughout the country, and is leading to the care of other archaeologic monuments which would otherwise soon have been destroyed. The State of Ohio has passed a law exempting the park from taxation, as well as all other ancient works in the State that may be protected in a similar manner. The Museum has thus been the means of bringing about the first law passed in this country for the preservation of archaeologic monuments, and the example thus set in Ohio will, it is hoped, soon be followed by other States.

The great importance of active field-work, in order to secure reliable information relating to the prehistoric peoples of America during the brief time left before their works are obliterated and their remains are scattered and lost, cannot be over-estimated. Every effort has been made to do our share in this great work, which can only be accomplished by continued liberal contributions from friends of American archaeological research, as the income of the Museum is too limited to furnish means for explorations.

The advance made in Anthropology during the past few years, and the position it has taken in the advanced thought of the time, calls for workers in all its departments. The Museum offers unrivalled opportunites for several lines of investigation which are worthy of being

The important event of the year is the erection of an addition to the Museum building, 60 × 60 feet, in the rear of the section fronting on Divinity Avenue. This will make a building 80 ft. wide on Divinity Avenue, and 100 ft. long; or one half of the contemplated structure for the Museum on the land given by the College. This addition will give two halls 60 × 60 ft., with two galleries about 20 ft. wide, for exhibition rooms; a lecture room, 60 × 40 ft., with wall-cases for the display of a systematic collection illustrating the principal points in Ethnology and Archaeology, and also a Curator's office and laboratory. It will be a year or more before cases can be placed in the new part, but eventually the square feet of shelving under glass will be considerable more than in the first section of the building. It will then be possible to make a systematic arrangement of the collections. Two large boilers are placed in the new part for heating the building, and there is room for two more when required in the future. The steam-piping and plumbing have been entirely changed in the old part of the building.

Many additions to the Museum have been received during the year, and over two thousand entries, covering several thousand specimens, have been made in the catalogue, which now contains 46,146 entries. There are still many thousand specimens to be catalogued, consisting of a large addition to the Peruvian collection, the important collection from the great shell-heap at Damariscotta, several hundred drawers of specimens obtained from the explorations in Ohio during the past few years, and the objects from the National Museum. All these are systematically arranged; but it is now impossible, without further assistance, for the Curator to meet all the demands upon him and keep the catalogue up to date.

Several special collections have been placed on exhibition during the year. The most important of these is that given by Mr. Hilborne T. Cresson of Philadelphia, which was dredged from the mud about the remains of three groups of pile-structures in the Delaware River. This is the first time that anything resembling the pile-structures of the Swiss Lakes and other parts of Europe has been found in America. The collection is also of great interest in the evidence which it gives of the contact of distinct peoples in the Delaware Valley.

In this connection it may be mentioned that we have also received from Mr. Cresson, Dr. Metz, and Dr. Abbott palaeolithic implements from the gravel in Delaware, Indiana, and Ohio, and from the now well-known Trenton gravel. The Lockwood collection, covered by 800 entries in the catalogue, is of great importance as it contains the results of 30 years' work of a careful archaeologist in New Jersey, who was the first to explore the great Keyport shell-heaps, now entirely obliterated. An interesting collection is that from Siberia, obtained by Mr. George A. Frost during his travels in that country and containing a number of prehistoric implements of stone, bronze, and iron, as well as objects used by the people of East Siberia. A considerable collection of ethnological objects from the Eastern Arctic regions and from the tribes of the Northwest coast, much needed for comparative study, has been received from the National Museum.

By the kindness of several friends who contributed $1533 in aid of the explorations in Ohio during the past year, work in the field was resumed and important results were secured, particularly in connection with the famous Serpent Mound of Adams county. This great earthwork, with over sixty acres of land about it, is now the property of the Museum. A park, known as the Serpent Mound Park, has been laid out and opened free to the public. A unique monument of a former people is thus preserved, while various trees native to the region have been planted in the park and an extensive arboretum is thus secured in a beautiful region among the hills of Southern Ohio, which it will repay any one to visit. The money for the purchase of the land, and for the preservation of the great earth-work and mounds near by, as well as for the exploration and fitting up of the park, was obtained by subscription by ladies of Boston. The preservation of this work has had a great influence throughout the country, and is leading to the care of other archaeologic monuments which would otherwise soon have been destroyed. The State of Ohio has passed a law exempting the park from taxation, as well as all other ancient works in the State that may be protected in a similar manner. The Museum has thus been the means of bringing about the first law passed in this country for the preservation of archaeologic monuments, and the example thus set in Ohio will, it is hoped, soon be followed by other States.

The great importance of active field-work, in order to secure reliable information relating to the prehistoric peoples of America during the brief time left before their works are obliterated and their remains are scattered and lost, cannot be over-estimated. Every effort has been made to do our share in this great work, which can only be accomplished by continued liberal contributions from friends of American archaeological research, as the income of the Museum is too limited to furnish means for explorations.

The advance made in Anthropology during the past few years, and the position it has taken in the advanced thought of the time, calls for workers in all its departments. The Museum offers unrivalled opportunites for several lines of investigation which are worthy of being followed by special students, and it seems important that this should be better known in the University.

Numerous additions have been made to the library of the Museum which, as in past years, have been catalogued at the General Library of the University, and the titles printed in the University Bulletin.

The first number of the new publication of the Museum is ready for issue under the title of "Archaeological and Ethnological Papers of the Peabody Museum."

There has been expended during the year: —

For cases, repairs, and incidentals on building,	$620.62
Incidental expenses of Museum,	161.38
Fuel, gas, and water,	222.05
Publications, drawings, engravings, and photographing,	248.25
Postage, express, telephone,	207.87
Library,	53.52
Salaries,	4,475.55
Explorations and collections,	1,986.15
	$7,970.89

HENRY WHEATLAND,

Secretary of the Board of Trustees of the Peabody Museum of American Archaeology and Ethnology.

APPENDIX.

I.

RESIGNATIONS.

John McGregor Goodale, Proctor, October 10, 1887.

Edward Charles Pickering, Phillips Professor of Astronomy, and Professor of Geodesy, October 28, 1887, to take effect September 1, 1887.

Charles Herbert Williams, Instructor in Ophthalmology, November 14, 1887.

John McKinstry Merriam, Proctor, November 28, 1887.

James Lawrence Laughlin, Assistant Professor of Political Economy, January 9, 1888.

Henry Edwards Scott, Proctor, January 9, 1888, to take effect February 10, 1888.

Marland Cogswell Hobbs, Proctor, March 26, 1888.

Daniel Taylor Hinckley, Superintendent of the Bussey Farm, March 12, 1888, to take effect March 31, 1888.

William Francis Ganong, Proctor, April 9, 1888.

Joseph Lovering, Hollis Professor of Mathematics and Natural Philosophy, April 9, 1888, to take effect September 1, 1888.

Allen Danforth, Bursar, May 29, 1888.

Edward Newton Whittier, Assistant Professor of Clinical Medicine, June 16, 1888, to take effect September 1, 1888.

Arthur Lawrence Hall, Proctor, September 25, 1888.

Charles Joyce White, Registrar, September 25, 1888, to take effect September 1, 1888.

II.

APPOINTMENTS.

[UNLIMITED, OR FOR TERMS LONGER THAN ONE YEAR.]

Wolcott Gibbs, to be Rumford Professor Emeritus, October 10, 1887.

James Gray Lathrop, to be Assistant in Physical Training for three years from September 1, 1887, October 10, 1887.

Arthur Searle, to be Phillips Professor of Astronomy from September 1, 1887, October 28, 1887.

William Coolidge Lane, to be Assistant Librarian, November 28, 1887.

William Hopkins Tillinghast, to be Assistant Librarian and Editor of the Quinquennial Catalogue, November 28, 1887.

Francis James Child,
Charles Franklin Dunbar,
George Lincoln Goodale,
Charles Eliot Norton,
Henry Warren Torrey,
Crawford Howell Toy,

to be members of the Council of the Library for three years from January 1, 1888, December 27, 1887.

Silas Marcus Macvane, to be McLean Professor of Ancient and Modern History, December, 27, 1887.

Ernest Young, to be Professor of History, December 27, 1887.

Edward Channing,
Albert Bushnell Hart, to be Assistant Professors of History, for five years from September 1, 1887, December 27, 1887.

John Trowbridge, to be Rumford Professor, February 27, 1888.

Marshall Swallow, to be Superintendent of the Bussey Farm from April 1, 1888, March 12, 1888.

George Lincoln Goodale, to be Fisher Professor of Natural History, March 26, 1888.

Barrett Wendell, to be Assistant Professor of English for five years from September 1, 1888, March 26, 1888.

Benjamin Osgood Peirce, to be Hollis Professor of Mathematics and Natural Philosophy, from September 1, 1888, April 9, 1888.

Edwin Herbert Hall, to be Assistant Professor of Physics for five years from September 1, 1888, April 9, 1888.

Leonard Dwinnell Garfield, to be Superintendent of Buildings from May 1, 1888, May 1, 1888.

George Lyman Kittredge, to be Instructor in English from September 1, 1888, May 1, 1888.

William Albert Keener, to be Story Professor of Law, May 14, 1888.

George Bendelari, to be Instructor in History, May 14, 1888.

William Branford Shubrick Clymer, to be Instructor in English, May 14, 1888.

George William Sawin, to be Instructor in Mathematics, May 14, 1888.

Freeman Snow, to be Instructor in International Law, May 14, 1888.

Abbott Lawrence Rotch, to be Assistant in Meteorology, May 14, 1888.

Clarence John Blake, to be Professor of Otology, May 29, 1888.

Frederick Cheever Shattuck, to be Professor of Clinical Medicine, May 29, 1888.

Allen Danforth, to be Deputy Treasurer, May 29, 1888.

Charles Frank Mason, to be Bursar, May 29, 1888.

Robert Sanderson, to be Instructor in French, May 29, 1888.

Samuel Jason Mixter, to be Demonstrator of Anatomy for five years from September 1, 1888, May 29, 1888.

William Henry Baker, to be Professor of Gynaecology, June 11, 1888.

John Orne Green, to be Clinical Professor of Otology, June 11, 1888.

Frederick Irving Knight, to be Clinical Professor of Laryngology, June 11, 1888.

Thomas Morgan Rotch, to be Assistant Professor of Diseases of Children for five years from September 1, 1888, June 11, 1888.

Morris Hicky Morgan, to be Tutor in Greek for three years from September 1, 1888, June 16, 1888.

Winfield Scott Chaplin, to be Chairman of the Parietal Committee from September 1, 1888, September 25, 1888.

Charles Harrington, to be Instructor in Materia Medica and Hygiene, September 25, 1888.

[FOR ONE YEAR OR LESS.]

For 1887-88.

John Joseph Hayes, to be Instructor in Elocution, October 10, 1887.
William Francis Ganong, to be Assistant in Botany, October 10, 1887.
Arthur Bliss Seymour, to be Assistant in the Cryptogamic Herbarium, October 10, 1887.
Walter Alexander, **John Henry Gray**, **Marland Cogswell Hobbs**, to be Proctors, October 10, 1887.
Otto Reinhardt Hansen, to be Proctor, October 28, 1887.
John Henry Gray, to be Instructor in Political Economy, January 30, 1888.
Francis Ellingwood Abbot, to be Instructor in Philosophy, February 27, 1888.
Eugene Howard Babbitt, to be Instructor in German, February 27, 1888.
Joseph Lybrand Markley, to be Instructor in Mathematics, February 27, 1888
Frédéric César Sumichrast, to be Instructor in French, February 27, 1888.
Stephen Arnold Bailey, to be Proctor, February 27, 1888.
Charles Towne Billings, to be Proctor, March 26, 1888.
Clarence Walter Ayer, to be Proctor, April 9, 1888.

Duren James Henderson Ward, to be Librarian of the Divinity School, October 10, 1887.

Samuel Jason Mixter, to be Demonstrator of Anatomy, October 10, 1887.
Otis Kimball Newell, to be Assistant Demonstrator of Anatomy, October 10, 1887.
Elliott Gray Brackett, to be Assistant in Materia Medica and Therapeutics, October 10, 1887.
William Merritt Conant, to be Assistant in Anatomy, October 10, 1887.
Charles Pratt Strong, to be Assistant in Gynaecology, October 10, 1887.
Frederick Edward Cheney, to be Instructor in Ophthalmology, November 14, 1887.
Charles Wendell Townsend, to be Assistant in Obstetrics, November 14, 1887.

For 1888-89.

Phillips Brooks, **Alexander McKenzie**, **George Angier Gordon**, **William Lawrence**, **Theodore Chickering Williams**, to be Preachers to the University, April 9, 1888.

Heman White Chaplin, to be Lecturer on Criminal Law, April 9, 1888.
William Schofield, to be Instructor in Roman Law, and in Torts, May 14, 1888.

DUREN JAMES HENDERSON WARD, to be Librarian of the Divinity School, June 11, 1888.
EDWARD NAPOLEON KIRBY, to be Instructor in Elocution, June 11, 1888.
JOHN CARROLL PERKINS, to be Proctor, June 11, 1888.

DANIEL DENISON SLADE, to be Lecturer on Comparative Osteology, May 14, 1888.
EUGENE HOWARD BABBITT, to be Instructor in German, May 14, 1888.
ERNEST LEE CONANT, to be Instructor in Forensics, May 14, 1888.
JOHN HENRY GRAY, to be Instructor in Political Economy, May 14, 1888.
CHARLES GROSS, to be Instructor in History, May 14, 1888.
THADDEUS WILLIAM HARRIS, to be Instructor in Geology, May 14, 1888.
JOHN JOSEPH HAYES, to be Instructor in Elocution, May 14, 1888.
GEORGE HOWARD PARKER, to be Instructor in Zoölogy, May 14, 1888.
FRÉDÉRIC CÉSAR SUMICHRAST, to be Instructor in French, May 14, 1888.
JOHN CASSAN WAIT, to be Instructor in Surveying and Drawing, May 14, 1888.
JOHN ELIOT WOLFF, to be Instructor in Petrography, May 14, 1888.
FRANCIS CLEAVELAND HUNTINGTON, to be Instructor in Political Economy, May 29, 1888.
DUREN JAMES HENDERSON WARD, to be Instructor in Philosophy, May 29, 1888.
GEORGE PIERCE BAKER, Jr., to be Instructor in English, June 11, 1888.
WILLIAM ROSCOE THAYER, to be Instructor in English, June 11, 1888.

GEORGE DUNNING MOORE, to be Proctor, June 16, 1888.
STEPHEN ARNOLD BAILEY,
CHARLES TOWNE BILLINGS,
EDGAR BUCKINGHAM,
GEORGE POPE FURBER,
OTTO REINHARDT HANSEN,
ALFRED HENRY LLOYD,
BRADLEY WEBSTER PALMER,
HOLLIS WEBSTER,
to be Proctors, September 25, 1888.

SAMUEL HOLMES DURGIN, to be Lecturer on Hygiene, May 29, 1888.
THEODORE WILLIS FISHER, to be Lecturer on Mental Diseases, May 29, 1888.
EDWARD HICKLING BRADFORD, to be Instructor in Surgery, May 29, 1888.
WILLIAM WHITWORTH GANNETT, to be Instructor in Pathology, May 29, 1888.
GEORGE MINOT GARLAND, to be Instructor in Clinical Medicine, May 29, 1888.
CHARLES MONTRAVILLE GREEN, to be Instructor in Obstetrics, May 29, 1888.
JAMES JACKSON PUTNAM, to be Instructor in Diseases of the Nervous System, May 29, 1888.
HENRY PARKER QUINCY, to be Instructor in Histology, May 29, 1888.
JOSEPH WEATHERHEAD WARREN, to be Instructor in Physiology, May 29, 1888.

ARTHUR TRACY CABOT, to be Clinical Instructor in Genito-urinary Surgery, May 29, 1888.
ELBRIDGE GERRY CUTLER, to be Clinical Instructor in Auscultation, May 29, 1888.

William Whitworth Gannett, to be Clinical Instructor in Auscultation, May 29, 1888.

Francis Boott Greenough, to be Clinical Instructor in Syphilis, May 29, 1888.

John Homans, to be Clinical Instructor in the Diagnosis and Treatment of Ovarian Tumors, May 29, 1888.

Abner Post, to be Clinical Instructor in Syphilis, May 29, 1888.

Oliver Fairfield Wadsworth, to be Clinical Instructor in Ophthalmoscopy, May 29, 1888.

George Lincoln Walton, to be Clinical Instructor in Diseases of the Nervous System, May 29, 1888.

Herbert Leslie Burrell, to be Demonstrator of Bandaging and Apparatus, May 29, 1888.

William Merritt Conant, to be Assistant in Anatomy, May 29, 1888.

Francis Henry Davenport, to be Assistant in Gynaecology, May 29, 1888.

William Carroll Emerson, to be Assistant in Chemistry, May 29, 1888.

Harold Clarence Ernst, to be Demonstrator of Bacteriology, May 29, 1888.

Robert Willard Greenleaf, to be Assistant in Histology and Embryology, May 29, 1888.

Charles Harrington, to be Assistant in Chemistry, May 29, 1888.

Francis Augustine Harris, to be Demonstrator of Medico-legal Examinations, May 29, 1888.

George Howard Monks, to be Assistant in Operative Surgery, May 29, 1888.

Otis Kimball Newell, to be Assistant Demonstrator of Anatomy, May 29, 1888.

Edward Reynolds, to be Assistant in Obstetrics, May 29, 1888.

Charles Pratt Strong, to be Assistant in Gynaecology, June 25, 1888.

Charles Wendell Townsend, to be Assistant in Obstetrics, May 29, 1888.

Herman Frank Vickery, to be Assistant in Clinical Medicine, May 29, 1888.

George Howard Monks, to be Instructor in Surgical Pathology, June 25, 1888.

Jere Edmund Stanton, to be Instructor in Oral Pathology and Anatomy, June 25, 1888.

Allston Gray Bouvé,
William Parker Cooke,
Forest Greenwood Eddy,
Edward Earl Hopkins,
Horatio Cook Meriam,
to be Instructors in Operative Dentistry, June 25, 1888.

Henry Michael Clifford, to be Demonstrator of Operative Dentistry, June 25, 1888.

Frederick Edward Cheney, to be Instructor in Ophthalmology, September 25, 1888.

Kenelm Winslow, to be Instructor in Materia Medica and Botany, September 25, 1888.

Daniel David Lee, to be Instructor in Anatomy and Operative Veterinary Surgery, September 25, 1888.

Edward Campbell Beckett, to be Superintendent of the Veterinary Hospital, and Assistant in Clinical Instruction, September 25, 1888.

DEGREES.

Bachelors of Arts of the Class of 1888	234
Bachelors of Arts receiving their degrees out of course	11
Bachelors of Science	1
Bachelors of Divinity and Masters of Arts	2
Bachelors of Law and Masters of Arts	11
Bachelors of Law receiving their degrees out of course	2
Bachelors of Law	21
Doctors of Medicine and Masters of Arts	3
Doctors of Medicine	69
Doctors of Dental Medicine	6
Doctors of Veterinary Medicine	1
Masters of Arts	30
Civil Engineers	4
Doctors of Philosophy	7

III.

Ninth. I give to the President and Fellows of Harvard College the sum of seventy five thousand dollars subject to the payment of the following annuities which I make a charge upon said sum. [Three annuities amounting to $1750.]

Subject to said annuities, said President and Fellows are to have and to hold said sum upon the trusts and with all the powers and rights, upon which they are to hold the property to be conveyed to them under the following clause:

Tenth. All the residue of my estate, including all property over which I have any power of appointment, I give to the said President and Fellows of Harvard College, to have and to hold to them upon the following trusts: to invest, reinvest and manage the same, collect the income, pay all expenses and charges, with the power, should they deem fit, of paying insurance out of the income, and any brokers commissions out of the principal, and also with the power of selling at public or private sale, leasing and conveying any property, real or personal, of which the trust fund may at any time consist, and to apply the net income for the support in Harvard College of higher instruction in History, Political Science and Literature (these subjects being taken in a comprehensive sense) in such manner as may from time to time seem most expedient to said President and Fellows. Should it be deemed advisable by said President and Fellows, it would be agreeable to me that they should, at their discretion, from time to time, and for periods of time, allow, so far as they lawfully may, the income of said trust fund, or a part thereof, to accumulate, and from such accumulations establish trust funds or foundations for professorships, assistant professorships or lectureships on any of the subjects above mentioned. It is my wish that persons supported by this fund or incumbents of positions created therefrom should have their duties as instructors made sufficiently moderate in amount to give them leisure to become creditable representatives of the existing state of knowledge in their respective departments and contributors to the advancement of that knowl-

INDEX.

PAGE

Appointments 167–171

ARNOLD ARBORETUM, report on 22, 138, 139

" " permanent systematic arrangement of, delayed . 22, 138

" " exchanges and gifts 138, 139

" " *Garden and Forest* 139

Athletic Sports 10, 79, 80

BOTANIC GARDEN, report on 20, 21, 133–137

" " use of plants from, by students 134

" " exhibits 135

" " accessions 136

Botanical Museum 25, 136

BUSSEY INSTITUTION, report on 119

CHEMICAL LABORATORY, report on 23, 139–143

" " instruction and number of students 140

" " equipment 141

" " changes and repairs needed 142

" " original work in 143

Classical Publication Fund 29, 30

COLLEGE, report on 31–83

" number of students in 31

" Special Students in 11, 34

" statistics of admission to 6, 7, 35–44

" discipline in 8, 9, 10, 44–45

" instruction in 8, 45–78

" seminaries, evening readings, and public lectures 45, 75

" honors in Natural History 79

" the health of holders of scholarships 11, 80

" proposed abridgment of courses for degree of A.B. . . 12, 13, 81–83

" relation to the graduate department 83

Deaths 3

Degrees 172

DENTAL SCHOOL 16, 17

" " report on 115–117

" " instruction 115, 116

" " pressing needs of 17, 117

DIVINITY SCHOOL 13, 14

" " report on 87–91

" " number of students 87

" " new library building 88

" " rearrangement of library 89

" " instruction 89–91

Fives Courts, building for 29

Gifts and bequests 21, 27, 28, 29, 89, 119, 129, 137, 148

Geological Museum, addition to 25, 163

Gore Hall, addition needed to 19, 20, 127

Graduate Department, report on 84–87

" " relation to the College Faculty 83

" " growth of 12

" " appointments to fellowships and scholarships 85–87

" " more fellowships needed for 12, 87

Gurney Fund 28, 172

Hastings Hall 27, 28

Herbarium, report on 20, 132, 133

Jefferson Physical Laboratory, report on 24, 144–149

" " " instruction and number of students 144

" " " original work 144–147

" " " gifts and additions to equipment . 148

" " " financial condition 149

Law School, report on 92–105

" " attendance during eighteen years 92

" " courses of study 93

" " results of examinations 94, 95

" " States, countries, and colleges from which students have come 96–100

" " proportion of Harvard graduates in the School 101

" " growth of the School 14, 102–105

" " Harvard Law School association 14

Lawrence Scientific School, report on 117, 118

" " " number of students 117

" " " group system of studies 118

" " " engineering courses 118

" " " proposed discontinuation of 18, 81, 118

Library, growth and immediate needs of 19, 20

" report on 122–132

" publications 122

" accessions 122, 124

" department libraries 123, 124

" use of 125–127

" cataloguing department 128–130

" ordering " 130, 131

" map " 132

Medical School 15, 16

" " report on 105–115

" " instruction in 105-107, 110–113

" " medical investigations in 107–109

" " number of students 109

" " examination statistics 114, 115

Museum of Comparative Zoölogy 25, 26

" " " report on 158–163

" " " instruction at 158

" " " accessions 159, 160

" " " publications 161

" " " financial condition 162, 163

" " " needs of the geological department 163

Number of Students, increase in 30

OBSERVATORY, report on 24, 149–158

" coöperative observations 149, 150

" a new building needed for 25, 150

" employment of instruments 150–153

" Henry Draper Memorial 153, 154

" Boyden Fund 154, 155

" meteorology 155

" time signals 156, 157

" publications 157, 158

PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY . . 26, 27

" " report on 163–166

" " board of trustees 163

" " addition to the Museum 27, 164

" " accessions 164

" " purchase of Serpent Mound 165

" " expenditures 166

Prayers, voluntary attendance at 9

Preachers to the University 5

Requirements for admission 6

Resignations 4, 5, 167

Scholarships, health of holders of 11

Statutes of the University, amendments to 5

Students from other colleges 10

Summer courses 12

University Museum 25, 136, 137, 159, 163

VETERINARY SCHOOL, report on 119–121

" " students in 119, 120

" " financial condition of 18, 19, 121

" " hospital of 18, 19, 120

THE ASTOR LIBRARY

TREASURER'S STATEMENT.

SIGILLVM ACADEMIAE HARVARDIANAE IN NOV ANG
CHRISTO ET ECCLESIAE
VE RI TAS

1888.

TREASURER'S STATEMENT.

To the Board of Overseers of Harvard College:—

The Treasurer of the College submits the Annual Statement of the financial affairs of the University, for the eleven months ending July 31, 1888, in the usual form. By vote of the Corporation the financial year will hereafter begin on August 1 and end on July 31, the salaries for the last quarter of each academic year being brought into the account by payment one month in advance.

The Funds separately invested, with the income thereof, are as follows: —

	Principal. July 31, 1888.	Income.
UNIVERSITY.		
John Cowdin Fund,		
Real Estate in Boston, ...	$22,000.00	$722.97
Walter Hastings Fund,		
Real Estate in Cambridge, ...	20.000.00	
Francis E. Parker Fund (part of),		
110 shares Bost. & Alb. R. R. Co. (sold during the year),		220.00
COLLEGE.		
Stoughton Scholarship (part of),		
Real Estate in Dorchester, ...	1,294.30	
Pennoyer Scholarships (part of),		
Pennoyer Annuity in England, ...	4,444.44	277.50
Rumford Professorship (part of),		
French Rentes (part sold during the year), . . .	4,502.89	624.49
Jonathan Phillips Gift,		
Mortgage, ...	10,000.00	500.00
Daniel H. Peirce Fund,		
Mortgage, ...	13,154.73	654.46
Samuel Ward's Gift,		
Ward's (Bumkin) Island, Boston Harbor, . . .	1,200.00	50.00
Scholarships of the **Class of 1856,**		
$10,000 Frem., Elkhorn & Mo. Valley R. R. 6's,	10,000.00	600.00
LIBRARY.		
Charles Minot Fund (part of),		
$60,000 Buffalo, Bradford, & Pittsb. R. R. 7's,	60,000.00	4,200.00
Ichabod Tucker Fund (part of),		
Policy of Mass. Hospital Life Insurance Co., . .	5,000.00	200.00
MUSEUM OF COMPARATIVE ZOÖLOGY.		
Agassiz Memorial Fund (part of),		
Personal note (paid off during the year), ...		262.42
Advances for new building, ...	2,057.23	7.08
Amounts carried forward,	$153,653.59	$8,318.92

Amounts brought forward,	$153,653.59	$8,318.92

OBSERVATORY.

Uriah A. Boyden Fund (part of),		
35 shares East Boston Ferry Co.,	1.00	
Robert Treat Paine Fund (part of),		
Mortgage,	7,000.00	350.00

SPECIAL FUNDS.

Bussey Trust,		
Real Estate,	413,092.80	21,754.66
Robert Troup Paine Fund (accumulating),		
$28,500 Massachusetts 5's,	32,662.50	1,388.33
Fund of the Class of 1834,		
Policy of Mass. Hospital Life Insurance Co.,	1,000.00	18.33
Fund of the Class of 1853,		
Policy of Mass. Hospital Life Insurance Co.,	2,625.00	63.11
Price Greenleaf Fund.*		
$43,500 Consolidated R. R. of Vermont 5's,	38,280.00	2,175.00
12,200 Rutland R. R. 6's,	12,932.00	732.00
37,200 Rutland R. R. 5's,	34,968.00	930.00
1,000 Cheshire R. R. 6's,	1,110.00	60.00
46,500 Ogdens. & L. Champ. R. R. 6's,	46,500.00	2,790.00
23,800 Ogdens. & L. Champ. R. R. income 6's,	10,234.00	
6,000 Ogdens. & L. Champ. R. R. Sinking Fund 8's,	6,360.00	480.00
3,000 Boston & Lowell R. R. 7's,	3,390.00	210.00
31,000 Michigan Central R. R. 8's,	33,480.00	2,480.00
8,000 Michigan Air Line R. R. 8's,	8,560.00	640.00
3,000 Chicago, Burl. & Quincy R. R. 4's,	2,880.00	60.00
4,000 Chicago, Burl. & Northern R. R. 5's,	4,000.00	200.00
23,000 Union Pacific R. R. 6's,	25,990.00	1,380.00
6,000 Union Pacific R. R. Land Grants 7's,	6,120.00	420.00
290 shares Northern R. R. (N. H.),	36,540.00	870.00
73 " Cheshire R. R. Preferred,	8,614.00	438.00
800 " Rutland " "	28,000.00	800.00
40 " Ogdens. & L. Champ. R. R.,	680.00	
208 " Boston & Maine "	43,056.00	2,080.00
95 " Eastern "	11,400.00	427.50
360 " Boston & Lowell "	46,800.00	2,520.00
140 " Fitchburg (Preferred) "	14,175.00	560.00
355 " Old Colony "	63,190.00	2,485.00
142 " Chicago, Burl. & Quincy R. R.,	19,312.00	994.00
24 " Chicago, Burl. & Northern "	1,968.00	
20 " N Y Central & Hudson River "	2,260.00	80.00
292 " Michigan Central "	28,032.00	584.00
122 " Union Pacific "	7,320.00	
52 " West End Street Railway Co.,	4,330.00	208.00
500 " Boston & Providence R. R.,	113,750.00	1,250.00
$5,000 City of St. Louis 6's (paid off dur. the year),		300.00
Amoskeag Manuf. Co.'s notes (paid off dur. the yr.),		2,036.67
Mortgages,	11,500.00	640.00
Deposit with New England Trust Co.,	9,253.74	133.75
Check for deposit with New England Trust Co.,	5,000.00	
Totals,	$1,300,019.63	$60,857.27

---

* The will of Mr. Greenleaf forbids the sale of any of his railroad bonds or stocks.

The other Funds are invested as a whole. The general investments are stated in detail on pages 20 and 21 of this report, but the usual summary statement of them, with the income thereof, is as follows: —

Investments.	Principal, September 1, 1887.	Principal, July 31, 1888.	Income.
Notes, Mortgages, &c., ...	$415,410.72	$690,345.27	$18,005.46
Railroad Bonds and Premiums, . . .	2,300,538.44	2,504,154.79	118,972.09
Railroad Stock, ...	387,515.33	387,515.33	20,738.00
New Boston Coal Mining Co. 7's, . .	9,000.00		1,350.00
Bank Stock, ...	63,964.00	63,964.00	5,915.74
Manufacturing Stock, ...	103,408.29	96,262.29	8,402.00
Real Estate, ...	1,415,529.17	1,415,292.74	75,382.13
Unimproved Lands, ...	71,705.04	71,705.04	
Brattle Street Reversion, ...	1,000.00	1,000.00	
Advances to Dental School, ...	6,601.43	5,111.67	363.08
" " Bussey Trust, ...	40,266.13	40,266.13	1,845.53
" " Dining Hall Association,	28,732.16	27,232.16	1,723.93
" " Observatory, ...	1,059.51		58.27
" " Observatory, Real Estate,	2,405.78	2,016.04	110.26
" " Lawn Tennis Association,	500.00	400.00	31.75
" " School of Veterinary Medicine, ...	15,537.15	17,113.27	854.54
Baring Brothers & Company, . . .	579.16	7,025.72	24.21
Term Bills due in October, ...	88,480.41	97,491.12	
Term Bills overdue, ...	2,240.03	2,147.22	
Cash in Suffolk National Bank, .	5,717.65	19,279.75	
Cash in hands of Bursar, ...	6,521.19	13,601.06	
Totals of general investments,	$4,966,711.59	$5,461,923.60	$253,776.99
Totals of special investments,	1,205,979.89	1,300,019.63	60,857.27
Amounts, ...	$6,172,691.48	$6,761,943.23	$314,634.26

The general investments made during the year have been chiefly in railroad bonds and temporary loans to corporations. The account of railroad bond premiums has been charged with the premiums and accrued interest on all railroad bonds bought, and credited with accrued interest and premium repaid. The sum of $23,536 taken from the year's income of railroad bonds has been applied as usual to repay a fair proportion of the total premiums. The bonds of the New Boston Coal Co. were sold flat for $1000 more than their original valuation, and the gain, being less than the accrued interest, has been treated as income. The valuation of vacant land on Townsend Street has been increased by the amount of taxes and expenses less the rent received for its temporary use. All other changes in the investments of the University are sufficiently accounted for by the receipts and payments hereinafter stated in detail.

The net income of the general investments ($253,776.99) has been divided at the rate of five per cent among the Funds to which they belong, after allowing to the Carey Building Fund and the Botanical Building Fund a special rate of four per cent on their balances during the period of construction; to the Walter Hastings Building Fund, three per cent; and $31.25 to the Price Greenleaf Fund. The fraction, which was $311.61, has been placed as usual to the credit of the University account.

The rate of income compared with that for 1886–87 shows a loss of $\frac{1}{10}$ of one per cent.

The following table shows the income available for the departments dependent upon the College proper, and the expenditures in those departments: —

Interest on funds for			
University Salaries and Expenses, ...		$26,962.77	
Library Salaries and Expenses (not books), . .		20,771.16	
College Salaries and Expenses, ...		32,073.79	
Gymnasium, and repairs on College buildings, .		none.	
College Term bills, ...		208,248.78	
Sundry receipts, as follows:			
Gifts for salaries, ...	$2,450.00		
Use of rooms, etc., ...	927.50		
Special fees, ...	10,085.55		
Repayments, sales, etc., ...	10,115.40	23,578.45	
			$311,634.95
Expended for			
University Salaries and Expenses, ...		$37,149.47	
Library Salaries and Expenses (not books), ...		26,307.56	
College Expenses, ...		59,532.46	
College Salaries, for instruction, ...		162,745.10	
Gymnasium Expenses, ...		10,467.07	
Repairs and insurance on College Buildings not valued on Treasurer's books, ...		12,303.24	
			308,504.90
Balance, which has been carried to Stock Account, to repay in part former deficits, ...			$3,130.05

For the University, College, and Library accounts there has been a surplus of $3130.05, due to a large increase of income from students and from the Price Greenleaf, Parker, and Cowdin Funds. This increase of income has also provided for a greater expenditure, and enabled the Corporation to make good in part former deficits by adding the year's income of the Stock account, amounting to $4257.55, to its capital. For 1886–87 there was a deficit of $7206.68, which sum was taken from the capital of the Stock account.

The unrestricted income of the University, College, and Library is so small in comparison with the demands upon it that no larger proportion of it can be spared for salaries of College instructors than that which is now so used. Since 1882 the increase of such income has been steady, in spite of reduced rates of interest, but it has been very slow when compared with the various and constantly increasing needs of a growing University. As the annual income from special endowments for the salaries of College instructors now amounts to less than one fifth of the present expenditure for such salaries, there is abundant room for the further endowment of existing professorships as well as for unrestricted gifts.

The Divinity School has a surplus for the year of $636.53, greater current expenses for the new building and for instruction having been partly met by a larger income from the Bussey Trust. For 1886–87 the surplus was $880.52.

For the Law School there has been a surplus of $8291.19, due chiefly to a large increase in the number of students, and in spite of unusual expenses. For 1886–87 the surplus was $2850.38.

For the Medical School there has been a surplus of $157.43, as the result of a somewhat smaller expenditure and a little less income from students. For 1886–87 there was a deficit of $11.74.

For the Dental School there has been a surplus of $1489.76, due chiefly to more income from tuition-fees. For 1886–87 there was a deficit of $345.19.

For the Lawrence Scientific School there has been a surplus of $214.19, due chiefly to an increase in the number of students. For 1886–87 there was a deficit of $760.26, but the division of expenses between the Scientific School and the College is now so arranged that a deficit does not create any debt for the School.

The Museum of Comparative Zoölogy has spent all the income of its restricted funds as required by the conditions of gift, and has used the surplus income of the Agassiz Memorial Fund as heretofore to pay in part the principal and interest of the advances from the Memorial Fund to extend the Museum building.

For the general account of the Observatory there has been a surplus of $3242.91, the unusual general expenditure of the previous year not having been continued. For 1886–87 there was a deficit of $946.41. The special outlays from the Boyden Fund and the Draper Memorial have been large during the year.

For the Bussey Institution there has been a surplus of $3169.97, due to a larger income from the Bussey Trust and from tuition-fees, and to less expenditure. For 1886–87 there was a deficit of $2461.22.

The Veterinary School has had a deficit of $1576.12, due to a large falling off in receipts from its Hospital. For 1886–87 there was a surplus of $652.22.

The net income from the Bussey Trust has been much larger than during the previous year, when unusual outlay was occasioned by a change of tenants. As there will be another change of tenants next year in one of the large stores, it is probable that the net income will again be temporarily reduced.

As to the account of each department of the University, except the Veterinary department, allowance should be made for the fact that substantially a whole year's income was received during the eleven months, while some of the outlays were for eleven months only. This has tended to make each surplus above stated appear larger than the actual yearly surplus, and therefore comparison with other years cannot be made quite fairly.

Gifts have been received during the year as follows: —

GIFTS TO FORM NEW FUNDS OR INCREASE OLD ONES.

From Edward Russell, $200, to increase the scholarship founded by him.

From the estate of Francis E. Parker, in stock and cash, $22,312.45, as the final instalment of his unrestricted bequest.

By the unrestricted bequest of John Cowdin the estate numbered 13 and 14 Charlestown Street, Boston, valued at $22,000.

From the trustees under the will of Walter Hastings, real estate on Sacramento Street, Cambridge, valued at $20,000, as part of the Walter Hastings Fund of which the income is to be used in such manner as the President and Fellows shall deem most useful for the purposes of the University.

By the bequest of William Perkins, $30,000, as a permanent fund, the income only to be expended, in memory of his three deceased sons, all graduates of the College.

By the bequest of Ellen Gurney, $158,544.24, the income to be used for the support in Harvard College of higher instruction in History, Political Science, and Literature. This fund is now charged with annuities amounting to one thousand dollars a year.

From the estate of E. Price Greenleaf, the additional sum of $60,000, on account of the "Price Greenleaf Fund."

From Miss Anna C. Lowell, $1000, to be added to the Lowell Fund for a Botanic Garden.

By the bequest of William Merrick, $5000, to found a scholarship, the income to be paid to some meritorious undergraduate, descendants of members of the Class of 1870 to have the preference.

From graduates of the Class of 1856, $6000, to establish the "Classical Publication Fund of the Class of 1856."

From the trustees under the will of Daniel Treadwell, the additional sum of $1700, on account of Professor Treadwell's residuary legacy for the use of the College Library.

From the estate of Robert Treat Paine, $498.40, as an additional payment for the Robert Treat Paine Fund.

From Henry Lee, his annual subscription of $300, for the further endowment of the Divinity School.

From an anonymous friend, $50, to be applied towards the fund for the endowment of the Dental School.

Additional subscriptions to be applied towards a fund for the endowment of the Observatory, paid to Aug. 1, 1888, from

J. I. Bowditch	$1000	F. H. Peabody	$100
T. Q. Browne	100	Prof. E. C. Pickering	200
			$1400

From Rev. John W. Quinby, $1175, to be used for the benefit of the Divinity School in such ways as shall seem best to the Dean and Faculty thereof.

The total amount of these gifts for capital account is $330.180.09, as is also stated on page 18 of this report.

GIFTS FOR IMMEDIATE USE.

From George W. Wales, $200, for books for the Library, in continuance of former gifts for the same purpose.

From Henry Lee, $1500, for the salary of an Instructor in Political Economy.

From an anonymous friend, $500, to increase the salary of the Professor of Entomology.

From Mrs. Henry Draper of New York, an additional sum of $4000, to be expended by the Director of the Observatory in prosecuting the researches in the photography of stellar spectra, with which the late Dr. Henry Draper's name is honorably associated.

From John Lowell, on behalf of himself and Mrs. Lowell, $400, as the third yearly payment for the support of two scholarships to be known as the George Emerson Lowell Scholarships.

From the Dante Society, $50, for the purchase of books on Dante.

From Mrs. C. M. Barnard, $600, as her annual gift for the Warren H. Cudworth Scholarships.

From Professor W. G. Farlow, $450, towards the salary of the Assistant in the Cryptogamic Herbarium for the year ending Aug. 31, 1888.

Additional subscriptions towards the new building for the library of the Divinity School, paid to Aug. 1, 1888, from

Abbot, Mrs. Emily E.	$25
Allen, Rev. Joseph Henry	50
Clark, Rev. George F.	5
Everett, Rev. C. C.	30
Forbes, Rev. John P.	5
Hale, Rev. Edward	25
Hedge, Rev. Frederic H.	10
Heywood, Rev. John H.	10
Milsted, Rev. T. G.	10
Muzzey, Rev. A. B.	$5.
Russell, Rev. Charles F.	5.
Society for Promoting Theological Education	5866.09
South Scituate First Parish (Unitarian)	7.
Thacher, Rev. Francis S.	10.
Willson, Rev. Edmund B.	5.
Winkley, Rev. S. H.	10.
	$6078.09

From Colonel Theodore A. Dodge, $25, for current use at the Veterinary Department.

From Mrs. Ezra Abbot, book-cases sold for $21.

Additional subscriptions towards building and furnishing an addition to the Museum of Comparative Zoölogy for the Botanic Department, paid to Aug. 1, 1888, from

Anonymous	$1500
Anonymous	500
Anonymous	500
Blake, Mrs. Arthur W.	100
Blake, Mrs. G. B.	15
Dickenson, Mrs. Anna E.	100
Ellis, Miss Lucy	500
Higginson, Mrs. H. L.	1000
Jackson, Miss Marian C.	150
Lyman, Mrs. Arthur T.	$250
Pickering, Mrs. Henry	25
Sears, Mrs. J. M.	1000
Turner, Miss Abby W.	100
Turner, Miss Alice M.	100
Walley, Mrs. W. P.	50
Ware, Mrs. Charles E.	2000
Ware, Miss Mary L.	1000
Warren, Mrs. Samuel D.	500
	$9390

From Henry R. A Carey, $25,000, to be used in building fives courts for the use of the University, especially for the Base-ball Nine.

From the trustees under the will of Walter Hastings, $200,000, for the erection of a dormitory on the grounds of Harvard College to be called the Walter Hastings Hall.

From the Harvard Law School Association, $1000, for the purpose of increasing the instruction in Constitutional Law during the year 1888–89.

From an anonymous friend, $500, towards the continuation of horticultural and botanical experiments and exhibitions in the Botanical Department.

From Mrs. H. S. Grew, $25, for present use at the Botanic Garden.

From Theodore Lyman, $500, for present use by the Botanical Department.

From an anonymous friend, $1000, for present use by the Botanical Department.

From Professor Asa Gray, $150, to the Herbarium for present use.

Subscriptions from graduates of the Dental School, to be applied towards the immediate wants of the School, paid to Aug. 1, 1888, from

Abbot, Dr. Charles H.	$25	Laskey, Dr. P. B.	$5
Bradbury, Dr. Edwin P.	25	Perrin, Dr. Frank	10
Codman, Dr. John T.	10	Potter, Dr. William H.	5
Eddy, Dr. Forrest G.	15	Shepherd, Dr. James	5
Fillebrown, Dr. Thomas	20	Wilson, Dr. Charles	10
Gillett, Dr. H. W.	5		$135

Subscriptions towards the purchase of the botanical collections of the late Professor Tuckerman from

Anonymous	$500	McKim, Haslett	$100
Anonymous	400	Parkman, G. F.	100
Dixwell, E. S.	300	Peabody, F. H.	100
Farlow, W. G.	100	Sargent, C. S.	100
Hodges, R. M.	50	Sprague, C. J.	50
Kidder, N. T.	1000	Sturgis, W. C.	200
			$3000

The total amount of these gifts for immediate use is $254,524.09, as is also stated on page 16 of this report.

OTHER GIFTS ACKNOWLEDGED BY THE CORPORATION.

From Dr. R. H. Harrison to the Veterinary Department, the anatomical plates prepared by him for use in his lectures.

By the bequest of Miss Dorothea L. Dix, "the flags and the accompanying parchment which were given to me by the U. S. Government, to be carefully preserved in memory of the patriotic and heroic sons of Harvard, who devoted themselves to maintain the integrity of the Union, and lost their lives during the War of the Rebellion."

From Augustus Lowell to the Botanic Garden Library, the work entitled "Flora Javae."

From Edward A. Silsbee, a manuscript of Shelley.

From Instructor John C. Wait and students of the Lawrence Scientific School, a map of the property of Harvard College in the vicinity of Harvard Square.

From the estate of Professor Asa Gray, all the copyrights of books of which he was the author, to aid in the support of the Gray Herbarium of Harvard University.

From Professor W. T. Thistleton-Dyer, Director of the Museum of the Royal Gardens at Kew, valuable specimens illustrating vegetable products.

From Dr. Francis H. Brown to the College Library, eleven volumes of manuscripts and cuttings relating to the part taken by the Alumni of the University in the war.

From John Harvey Treat, of the Class of 1862, to the College Library, a large collection of books and pamphlets relating to patristic and ritualistic subjects.

From Dr. Daniel D. Slade to the Library of the Veterinary School, books pertaining to veterinary medicine and surgery, some of which formerly belonged to the late Dr. Edward Brooks of Boston.

EDWARD W. HOOPER, *Treasurer.*

BOSTON, November 24, 1888.

From an anonymous friend, $1000, for present use by the Botanical Department.

From Professor Asa Gray, $150, to the Herbarium for present use.

Subscriptions from graduates of the Dental School, to be applied towards the immediate wants of the School, paid to Aug. 1, 1888, from

Abbot, Dr. Charles H.	$25	Laskey, Dr. P. B.	$5
Bradbury, Dr. Edwin P.	25	Perrin, Dr. Frank	10
Codman, Dr. John T.	10	Potter, Dr. William H.	5
Eddy, Dr. Forrest G.	15	Shepherd, Dr. James	5
Fillebrown, Dr. Thomas	20	Wilson, Dr. Charles	10
Gillett, Dr. H. W.	5		$135

Subscriptions towards the purchase of the botanical collections of the late Professor Tuckerman from

Anonymous	$500	McKim, Haslett	$100
Anonymous	400	Parkman, G. F.	100
Dixwell, E. S.	300	Peabody, F. H.	100
Farlow, W. G.	100	Sargent, C. S.	100
Hodges, R. M.	50	Sprague, C. J.	50
Kidder, N. T.	1000	Sturgis, W. C.	200
			$3000

The total amount of these gifts for immediate use is $254,524.09, as is also stated on page 16 of this report.

OTHER GIFTS ACKNOWLEDGED BY THE CORPORATION.

From Dr. R. H. Harrison to the Veterinary Department, the anatomical plates prepared by him for use in his lectures.

By the bequest of Miss Dorothea L. Dix, "the flags and the accompanying parchment which were given to me by the U. S. Government, to be carefully preserved in memory of the patriotic and heroic sons of Harvard, who devoted themselves to maintain the integrity of the Union, and lost their lives during the War of the Rebellion."

From Augustus Lowell to the Botanic Garden Library, the work entitled "Flora Javae."

From Edward A. Silsbee, a manuscript of Shelley.

From Instructor John C. Wait and students of the Lawrence Scientific School, a map of the property of Harvard College in the vicinity of Harvard Square.

From the estate of Professor Asa Gray, all the copyrights of books of which he was the author, to aid in the support of the Gray Herbarium of Harvard University.

From Professor W. T. Thistleton-Dyer, Director of the Museum of the Royal Gardens at Kew, valuable specimens illustrating vegetable products.

From Dr. Francis H. Brown to the College Library, eleven volumes of manuscripts and cuttings relating to the part taken by the Alumni of the University in the war.

From John Harvey Treat, of the Class of 1862, to the College Library, a large collection of books and pamphlets relating to patristic and ritualistic subjects.

From Dr. Daniel D. Slade to the Library of the Veterinary School, books pertaining to veterinary medicine and surgery, some of which formerly belonged to the late Dr. Edward Brooks of Boston.

EDWARD W. HOOPER, *Treasurer.*

BOSTON, November 24, 1888.

General Statement of Receipts and Disbursements for the eleven months

INCOME.

Interest on notes, mortgages, and advances,		$27,467.66
" " Massachusetts 5's,		1,388.33
" " Policies Mass. Hospital Life Insurance Co.,		281.44
" " New Boston Coal Mining Co. 7's,		1,350.00
" " Deposit with New England Trust Co.		133.75
" " Railroad Bonds (after deductions for sinking premiums).		
Atchison, Topeka & St. Fe 7's,	$11,100.00	
Buffalo, Bradford & Pittsburg 7's,	4,200.00	
Burlington & Mo. River in Neb. 6's,	16,445.50	
Atchison & Nebraska 7's,	9,000.00	
Marion & McPherson 7's,	9,000.00	
Ionia & Lansing 8's,	12,000.00	
Kan. City, St. Jos. & Council Bluffs 7's,	3,000.00	
Kansas City, Topeka & Western 7's,	6,480.00	
Fort Scott, So. E. & Memphis 7's,	6,252.56	
Kansas City & Cameron 10's,	9,000.00	
Lincoln & No. Western 7's,	1,500.00	
Eastern Railroad sterling 6's,	3,535.09	
Fremont, Elkhorn & Mo. Valley 6's,	600.00	
Chicago, Burlington & Quincy 4's,	60.00	
Eastern Railroad 6's,	18,559.68	
Consolidated R. R. of Vermont 5's,	2,175.00	
Rutland Railroad 6's,	732.00	
Rutland Railroad 5's,	930.00	
Cheshire Railroad 6's,	60.00	
Michigan Central 8's,	2,480.00	
Michigan Air Line 8's,	640.00	
Union Pacific 6's,	1,380.00	
Hannibal & St. Joseph 6's,	10,000.00	
Chicago, Burlington & Quincy 5's,	2,083.33	
Kansas City, Ft. Scott & Gulf 7's,	788.04	
Dixon, Peoria & Hannibal 8's,	134.56	
Chicago & Michigan Lake Shore 8's,	93.33	
Ogdens. & Lake Champlain 6's,	2,790.00	
Ogdens. & Lake Champlain 8's,	480.00	
Boston & Lowell 7's,	210.00	
Chicago, Burlington & Northern 5's,	200.00	
Union Pacific 7's,	420.00	
		136,329.09
" " Municipal Bonds.		
St. Louis 6's,		300.00
Dividends on Stocks.		
Charles River National Bank,	450.00	
First (Cambridge) " "	400.00	
Fitchburg " "	144.00	
Massachusetts " "	120.00	
Amounts carried forward,	$1,114.00	$167,250.27

by the Treasurer of Harvard College, ending July 31, 1888.

EXPENSES.

Paid to account of Expenses in the

University, as per Table I. (page 36),		$47,871.14
College, " " II. (page 38).		
Salaries for instruction,	$162,745.10	
Repairs and Insurance on College Edifices, not valued on Treasurer's books,	12,303.24	
General Expenses,	59,532.46	
Scholarships,	29,265.74	
Beneficiaries,	7,464.25	
Prizes,	818.21	
Botanic Garden,	7,131.22	
Herbarium,	1,728.39	
Hemenway Gymnasium,	10,467.07	
Jefferson Physical Laboratory,	5,567.82	
Quarterly Journal of Economics,	957.78	
Account of new Botanical Building,	10,400.00	
Tuckerman Botanical Collection,	3,000.00	
Books for special departments,	870.68	
Plan of Stoughton land in Dorchester,	6.00	312,257.96
Library, as per Table III. (page 44).		
Books,	16,061.64	
Salaries and other expenses,	26,307.56	42,369.20
Divinity School, as per Table IV. (page 46).		
Salaries and other expenses,	22,878.43	
Scholarships and Beneficiaries,	385.00	
Account of new Library Building,	11,951.80	35,215.23
Law School, as per Table V. (page 47),		36,639.61
Medical School, as per Table VI. (page 48),		66,247.04
Dental School, as per Table VII. (page 50),		6,273.51
Lawrence Scientific School, as per Table VIII. (page 51).		
Salaries and other expenses,	17,199.77	
Museum of Comparative Zoölogy,	23,997.35	41,197.12
Amount carried forward		$588,070.81

General Statement of Receipts and Disbursements for the eleven months

INCOME.

Amounts brought forward, .	$1,114.00	$167,250.27
Dividends on stocks.		
Merchants " "	1,584.00	
New England " "	259.00	
Old Boston " " . . .	550.00	
Bank taxes refunded, ...	2,408.74	
		5,915.74
Amoskeag Manufacturing Co., . . .	1,200.00	
Amory " " . . .	576.00	
Massachusetts " " . . .	280.00	
Merrimack " " . . .	1,190.00	
Nashua " " . . .	1,620.00	
Stark Mills, ...	960.00	
Wamsutta Mills, ...	576.00	
Pacific Mills, ...	2,000.00	
		8,402.00
Chicago, Burlington & Quincy R. R., .	10,101.00	
Pittsfield & North Adams R. R., . . .	815.00	
Eastern R. R., preferred, ...	11,316.00	
Cheshire R. R., preferred, ...	438.00	
Rutland R. R., preferred, ...	800.00	
Boston & Maine R. R., ...	2,080.00	
Old Colony R. R., ...	2,485.00	
New York Cent. & Hud. River R. R.,	80.00	
Michigan Central R. R., ...	584.00	
Eastern R. R., common, ...	427.50	
Boston & Lowell R. R.	2,520.00	
Boston & Providence R. R., ...	1,250.00	
Boston & Albany R. R., ...	220.00	
Northern R. R. (N. H.), ...	870.00	
Fitchburg R. R., preferred, ...	560.00	
West End Street Railway Co., ...	208.00	
		34,254.50
Real Estate, from rents, &c. (gross receipts).		
Cambridge (Houses and Lands), ...	$35,007.35	
Boston (general investments), ...	81,470.76	
Bussey real estate, ...	35,271.76	
Sundry estates, ...	7,408.10	
		159,157.97
Term Bills.		
College, as per Table II., ...	208,243.78	
Divinity School, as per Table IV., ...	3,103.09	
Law School, as per Table V., ...	31,292.86	
Medical School, as per Table VI., ...	55,695.81	
Dental School, as per Table VII., ...	5,380.00	
Lawrence Scientific School, as per Table VIII.,	3,243.71	
Bussey Institution, as per Table X., ...	455.00	
School of Veterinary Medicine, as per Table X.,	2,641.50	
		310,060.75
Amount carried forward, ...		$685,041.23

by the Treasurer of Harvard College,
ending July 31, 1888.

EXPENSES.

Amount brought forward, ...			$588,070.81
Paid to account of Expenses in the			
Observatory, as per Table IX. (page 52), ...			35,040.01
Bussey Institution, as per Table X. (page 53),		$7,171.94	
School of Veter'y Medicine, as per Table X. (page 53),		16,238.31	
Arnold Arboretum, as per Table X. (page 53),		7,515.18	30,925.43
Real Estate, expenses.			
Insurance.			
Boston, ...	$677.75		
Bussey real estate, ...	194.25		
Sundry estates, ...	230.40	1,102.40	
Taxes.			
Cambridge, ...	2,113.83		
Boston, ...	13,949.40		
Bussey real estate, ...	7,133.96		
Sundry estates, ...	271.35	23,468.54	
Interest.			
Bussey real estate (on advances), ...		1,845.53	
Repairs, improvements, care, cleaning and sundries.			
Cambridge, ...	8,357.04		
Boston, ...	15,902.15		
Bussey real estate, ...	1,364.54		
Sundry estates, ...	53.45	25,677.18	
Heating and hoisting for **Bussey** stores, including repairs and renewal of apparatus, ...	5,299.65		
Less for sales of heat and power, .	2,320.83	2,978.82	55,072.47
Annuities.			
Bussey, ...		6,300.00	
Gore, ...		600.00	
Lucy Osgood, ...		420.00	
Class of 1802, ...		120.00	
Bemis, ...		2,572.50	
Gurney, ...		573.29	10,585.79
Class Funds.			
Paid the Secretary of the **Class of 1834,**		18.33	
" " " " **1853,**		63.11	81.44
Walter Hastings Building Fund.			
Paid on account of the erection of **Hastings** Hall, ...			4,008.00
Amount carried forward, ...			$723,783.95

General Statement of Receipts and Disbursements for the eleven months

INCOME.

Amount brought forward, . . .			$685,041.23
Sundries.			
From **Wm. Pennoyer** Annuity, ...		$277.50	
Trustees of **Thayer** Scholarships, ...		3,500.00	
" **Count Rumford's** Legacy, . .		624.49	
" **Edward Hopkins**, ...		235.54	
For use of Library by resident graduates and others,		155.00	
Fees for admission examinations, &c., ...		829.00	
Fees in Infirmary and Laboratory, Dental School,		2,107.37	
Printing by College Press for other departments,		6,815.64	
Sales of grass, wood, and old material, ...		1,757.47	
Sales of old examination papers, ...		76.04	
Sale of time signals from Observatory, ...		3,012.50	
Sale of tickets to Commencement Dinner, ...		515.00	
Sale of books, pamphlets, catalogues, &c., ...		1,952.45	
Subscriptions to Veterinary Hospital, ...		810.00	
Fees from Veterinary Hospital and Forge, ...		11,185.69	
Board of horses, cattle, &c. at Bussey Institution,		924.78	
Use of lockers at Gymnasium, ...		2,148.00	
Fees for use of Gymnasium, ...		30.00	
Repayment of sundry advances, ...		516.41	
Examination fee for the degree of Ph.D., ...		30.00	
Insurance for fire in Janitor's house, Cambridge, .		174.00	
Proportion of expenses of Gymnasium repaid by other departments, ...		1,498.12	
Laboratory instruction to Dental and Veterinary students, ...		320.00	
Laboratory fees { Chemical	$4,746.05		
Physical	890.00		
Natural History	1,257.50		
		6,893.55	
			46,888.55
Sundry gifts for immediate use, see page 10, ...			254,524.09
Total amount of income, ...			$985,953.87

RECEIPTS EXCLUSIVE OF INCOME.

GIFTS.

Edward Russell Scholarship (additional), ...	$200.00	
Subscriptions for endowment of Dental School (additional), ...	50.00	
Subscriptions for endowment of Observatory (additional), ...	1,400.00	
Subscriptions for endowment of Divinity School (additional), ...	300.00	
Price Greenleaf Fund (additional), ...	60,000.00	
Francis E. Parker Fund "	22,312.45	
Amounts carried forward,	$84,262.45	$985,953.87

by the Treasurer of Harvard College, ending July 31, 1888.

EXPENSES.

Amount brought forward, . .		$723,783.95
Sundry payments from income.		
To the Treasurer of the Museum of Fine Arts, from **Gray** Fund for Engravings, ...	$814.37	
The income of the **Daniel Williams** Fund for the benefit of the Herring Pond and Mashpee Indians,	818.89	
The income of the **Sarah Winslow** Fund, to the Minister and Teacher at Tyngsboro', Mass., . .	239.44	
Legal services and expenses, ...	59.75	
		1,932.45
Total amount of expenses, ...		$725,716.40

INVESTMENTS AND SUNDRY PAYMENTS.

Burl. & Mo. River (Neb.) R. R. 6's,	$12,000 cost,	$12,800.00	
Chic. Burl. & Quincy R. R. 5's,	60,000 "	60,000.00	
St. Paul, Minn. & Man. R. R. 5's,	100,000 "	91,562.50	
Kan. City, Ft. Scott & Gulf R.R. 7's,	33,000 "	37,950.00	
Ft. Scott, So. E. & Memphis R.R. 7's,	12,000 "	13,325.00	
Dixon, Peoria & Hann. R. R. 8's,	4,000 "	4,130.00	
Chic. & Mich. Lake Shore R. R. 8's,	12,000 "	12,420.00	
Eastern R. R. 6's, ...	7,000 "	8,540.00	
Massachusetts 5's, 1894 (**Paine** Fund)	1,000 "	1,110.00	
Paid for accrued interest and expenses on the above bonds, ...		2,031.52	
500 shares Boston & Providence R. R. stock, cost .		113,750.00	
52 " West End Street Railway Co. stock received in exchange, ...		4,330.00	
Estate on Charlestown St., Boston, received by bequest of **John Cowdin**, valued at		22,000.00	
Estate on Sacramento St., Cambridge, received as a portion of the **Walter Hastings** Fund, . . .		20,000.00	
110 shares Boston & Albany R. R. stock, received as a portion of the **Francis E. Parker** Fund, .		21,627.74	
			425,576.76
Invested in Notes and Mortgages, ...		810,000.00	
Less notes and Mortgages paid off, ...		602,725.57	
			207,274.43
Paid Baring Brothers & Co. in account, ...			6,446.56
Paid on account of the extension of the Natural History Laboratories, ...		2,800.00	
Less amount repaid by Museum of Comparative Zoölogy, ...		742.77	
			2,057.23
Amount carried forward, ...			$1,367,071.38

General Statement of Receipts and Disbursements for the eleven months

RECEIPTS EXCLUSIVE OF INCOME.

Amounts brought forward,	$84,262.45	$985,953.87
GIFTS.		
Robert Treat Paine Fund (additional), ...	$498.40	
Lowell Fund for a Botanic Garden "	1,000.00	
Daniel Treadwell Fund "	1,700.00	
John Cowdin Fund, ...	22,000.00	
Walter Hastings Fund, ...	20,000.00	
Gurney Fund, ...	158,544.24	
William Perkins Fund, ...	30,000.00	
William Merrick Scholarship, ...	5,000.00	
Classical Publication Fund of the Class of 1856, .	6.000.00	
John W. Quinby Fund, ...	1,175,00	330,180.09
SALES.		
$11,600 Burl. & Mo. R. (Neb.) R. R. 6's (paid off),	11,600.00	
1,000 Ft. Scott, So. E. & Memp. R.R. 7's "	1,050.00	
5,000 City of St. Louis 6's, "	5,000.00	
30 shares Metropolitan (Horse) R. R. exchanged for West End Street Railway Stock, 10 shares Cambridge (Horse) R. R. exchanged for West End Street Railway Stock,	4,330.00	
Cash received in the above exchange	29.74	
12 fractions Amoskeag Manufacturing Co., ...	7,146.00	
Strip of land on Holyoke St., Cambridge, ...	403.77	
110 shares Boston & Albany R. R. Stock, ...	21,627.74	
$10,000 New Boston Coal Mining Co. 7's, ...	9,000.00	
On account of sale of French Rentes, ...	5,497.11	65,684.36
SUNDRIES.		
From Dining Hall Association, to reduce debt, . . .	1,500.00	
" Lawn Tennis Assoc., on account of loan repaid,	100.00	
Advances to premiums, on $1,903,650 R.R. B., repaid,	23,536.00	
" " accrued interest and expenses on Bonds repaid, ...	2,956.67	28,092.67
Balance, September 1, 1887.		
Cash in Suffolk National Bank, ...	$5,717.65	
Cash in New England Trust Co., ...	974.00	
Cash in hands of Allen Danforth, Bursar, . . .	6,521.19	
Term Bills due October, 1887, ...	88,480.41	
" " overdue, ...	2,240.03	103,933.28
Total, ...		$1,513,844.27

by the Treasurer of Harvard College, ending July 31, 1888.

INVESTMENTS AND SUNDRY PAYMENTS.

Amount brought forward, $1,367,071.38

Balance, July 31, 1888.		
Cash in Suffolk National Bank, ...	**$19,279.75**	
Cash in New England Trust Co., ...	**9,253.74**	
Check for deposit in New England Trust Co., .	**5,000.00**	
Cash in hands of Charles F. Mason, Bursar, . .	**13,601.06**	
Term Bills due October, 1888, ...	**97,491.12**	
" " overdue, ...	**2,147.22**	
		146,772.89
Total, ...		**$1,513,844.27**

The following Account exhibits the State of the Property, as entered upon the Treasurer's Books, July 31, 1888.

Separate Investments, as stated in detail on pages 1 and 2 of this report, consisting of

Mortgages,	$41,654.73	
State Bonds,	32,662.50	
Railroad Bonds,	304,804.00	
Railroad Stocks,	429,427.00	
Real Estate,	457,587.10	
Sundries,	33,884.30	
Amounting to		$1,300,019.63

And "General Investments" as follows: —

Mortgages and Notes.

Mortgages,	65,345.27	
Long Wharf Co.'s Note,	10,000.00	
Boott Cotton Mills' Notes,	115,000.00	
Lawrence Manufacturing Co.'s Note,	50,000.00	
Amoskeag Manufacturing Co.'s Notes,	250,000.00	
Chicago, Burl. & Quincy R. R. Co.'s Notes,	50,000.00	
Great Falls Manufacturing Co.'s Note,	50,000.00	
Tremont and Suffolk Mills' Note,	50,000.00	
Massachusetts Cotton Mills' Note,	50,000.00	
		690,345.27

Railroad Bonds.

Burl. & Mo. R. in Nebr. non ex. 6's,	325,000	val'd at	325,000.00	
Kan. City, St. Jos. & C. B., 1st M. 7's,	50,000	" "	50,000.00	
Lincoln & No. West., 1st M. 7's,	25,000	" "	25,000.00	
Kan. City & Camer., 1st M. 10's,	150,000	" "	150,000.00	
Atchison & Nebraska, 1st M. 7's,	150,000	" "	150,000.00	
Atch., Top. & St. Fé, 1st M. 7's,	185,000	" "	185,000.00	
Kan. City, Top. & West., 1st M. 7's,	108,000	" "	108,000.00	
Marion & McPherson, 1st M. 7's,	150,000	" "	150,000.00	
Ionia & Lansing, 1st Mortg. 8's,	150,000	" "	149,901.25	
Ft. Scott, So. E. & Mem., 1st M. 7's,	115,000	" "	115,000.00	
Hann. & St. Joseph, 1st M. 6's,	200,000	" "	200,000.00	
Eastern, 1st Mortg. 6's,	393,000	" "	393,000.00	
Eastern, " " " Sterling,	£14,600	" "	71,050.90	
Chicago, Burl. & Quincy 5's,	60,000	" "	60,000.00	
St. Paul, Minn. & Manitoba 5's,	100,000	" "	91,562.50	
Kan. C., Ft. Scott & G'lf 1st M. 7's,	33,000	" "	33,000.00	
Dixon, Peoria & Hann. 1st M. 8's,	4,000	" "	4,000.00	
Chic. & Mich. Lake Sh. 1st M. 8's,	12,000	" "	12,000.00	
Railroad Bond Premiums,			231,640.14	
				2,504,154.79

Railroad Stock.

Chicago, Burlington & Quincy,	1,301 shares,	136,035.33	
Pittsfield & North Adams,	63 "	6,300.00	
Eastern, preferred,	1,886 "	245,180.00	
			387,515.33
Amount carried forward,			$4,882,035.02

Amount brought forward, ...			$4,882,035.02
Manufacturing Stock.			
Amory, ...	36 shares,	$3,600.00	
Amoskeag, ...	12 "	3,654.00	
Massachusetts Mills, ...	7 "	6,600.00	
Merrimack, ...	17 "	17,000.00	
Nashua, ...	36 "	25,560.00	
Pacific Mills, ...	20 "	17,468.29	
Stark Mills, ...	12 "	11,900.00	
Wamsutta Mills, ...	96 "	10,480.00	
			96,262.29
Bank Stock.			
Charles River, ...	60 shares,	6,000.00	
First Cambridge, ...	50 "	5,000.00	
Fitchburg, ...	24 "	2,403.00	
Massachusetts, ...	12 "	3,000.00	
Merchants, ...	264 "	34,732.00	
New England, ...	37 "	3,896.00	
Old Boston (new par $100), . . .	100 "	8,933.00	
			63,964.00
Real Estate.			
Houses and Lands in Cambridge yielding income,		353,585.06	
Unimproved Lands in Cambridge, ...		71,705.04	
Amory Estate, Franklin Street, Boston, . . .		165,615.81	
Webb Estate, Washington Street, Boston, . .		164,604.79	
Andrews Estate, Washington Street, Boston, .		165,562.00	
Gray Estate, Washington Street, Boston, . . .		487,119.12	
Estate on Hawley Street, Boston, ...		38,650.78	
Estate on Hawkins Street, Boston, ...		29,476.09	
Reversion of Buildings on Brattle Street, Boston,		1,000.00	
Estate on Townsend Street, Roxbury, ...		10,679.09	
			1,487,997.78
Sundries.			
Due from Dining Hall Association, ...		27,232.16	
" " Bussey Trust, ...		40,266.13	
" " Dental School, ...		5,111.67	
" " School of Veterinary Medicine, . . .		17,113.27	
" " Lawn Tennis Association, ...		400.00	
Advances to Observatory real estate, ...		2,016.04	
Baring Brothers & Co., ...		7,025.72	
Term bills due October, 1888, ...		97,491.12	
" " overdue, ...		2,147.22	
			198,803.33
Cash in Suffolk National Bank, ...		19,279.75	
" " hands of Charles F. Mason, Bursar, ...		13,601.06	32,880.81
Total, ...			$6,761,943.23

The foregoing Property represents the following Funds and Balances, and is answerable for the same.

UNIVERSITY FUNDS.

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
$85,150.56	Stock Account (so called), ...	$92,538.16	
125,138.74	Insurance and Guaranty F'd. (so called),	125,138.74	
15,750.00	**Israel Munson** Fund, ...	15,750.00	
16.871.63	**Leonard Jarvis** "	16,871.63	
9,000.00	**Sever** Fund (unrestricted), ...	9,000.00	
25,000.00	**John C. Gray** Fund, ...	25,000.00	
115,966.56	**George B. Dorr** Fund, ...	115,966.56	
5,000.00	**Seth Turner** Fund, ...	5,000.00	
91,504.99	**Francis E. Parker** Fund, ...	113,817.44	
62,545.47	President's Fund, ...	62,672.72	
154.96	**Thomas Cotton** Fund, ...	154.82	
367.87	**Peter C. Brooks** "		
5,250.00	**Samuel D. Bradford** Fund, . . .	5,250.00	
31,737.33	Retiring Allowance Fund, ...	33,324.18	
	John Cowdin Fund, ...	22,000.00	
56,615.81	**John Parker** Fellowships, ...	56,646.61	
10,297.48	**Robert Treat Paine** Fellowship, . .	10,562.38	
10,552.36	**Harris** Fellowship, ...	10,800.90	
11,287.13	**John Thornton Kirkland** Fellowship,	11,476.48	
10,863.53	**James Walker** Fellowship, . . .	10,906.73	
31,957.48	**Rogers** Fellowships, ...	31,580.33	
81,943.73	**Henry T. Morgan** Fund, ...	81,943.73	
11,022.46	**John Tyndall** Scholarship, ...	11,073.56	
2,184.93	**Sumner** Prize Fund, ...	2,194.18	
150.00	**Robert N. Toppan** Prizes	150.00	
200.00	Dante Prizes, ...	150.00	
100.00	**John O. Sargent** Prizes, ...		
	Walter Hastings Fund, ...	19,913.65	
			$889,882.75

COLLEGE FUNDS.

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
27,748.64	**Alford** Professorship, ...	27,748.64	
28,337.40	**Boylston** "	28,337.40	
21,619.50	**Eliot** "	21,619.50	
10,000.00	" " (Jon. Phillips's gift)	10,000.00	
3,500.01	**Erving** "	3,500.01	
35,990.99	**Fisher** "	35,990.99	
20,217.08	**Hersey** "	20,217.08	
21,744.18	" " (Thomas Lee's gift),	21,744.18	
3,747.33	**Hollis** " (Mathematics), . .	3,747 33	
34,517.60	**Hollis** " (Divinity), ...	34,517.60	
43,062.93	**McLean** "	43,062.93	
21,000.00	**Perkins** "	21,000.00	
25,020.19	**Plummer** "	25,020.19	
$1,113,118.87	. . . . . . Amounts carried forward,	$296,505.85	$889,882.75

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
$1,113,118.87	Amounts brought forward,	$296,505.85	$889,882.75
52,500.00	**Pope** Professorship,	52,500.00	
52,996.37	**Rumford** "	52,996.37	
23,139.83	**Smith** "	23,139.83	
	Gurney Fund,	161,368.60	
16,240.38	**Fund for Permanent Tutors,**	16,240.38	
15.796.97	**Lee** Fund for Reading,	15,796.97	
145,000.00	**Class Subscription** Fund,	145,000.00	
13,089.28	**Daniel H. Peirce** "	13,154.73	
2,629.36	**Paul Dudley** Fund for Lectures,	2,760.81	
31,500.00	**Jonathan Phillips** Fd. (unrestricted)	31,500.00	
1,050.00	**John A. Blanchard** " "	1,050.00	
4,421.22	**John W P Abbot** " "	4,642.27	
6,230.00	**Daniel Austin** " "	6,230.00	
344.45	**Henry Flynt's** Bequest,	344.12	
	William Perkins Fund,	30,000.00	
2,941.42	**Abbot** Scholarship,	3,088.47	
934.11	**Alford** "	980.81	
5,261.12	**Bartlett** "	5,274.17	
5,600.00	**Bassett** "	5,610.00	
11,565.56	**Bigelow** "	11,643.86	
109,450.55	**Bowditch** "	109,423.10	
326.84	**Bright** " (balance),	326.84	
3,025.41	**Browne** "	3,176.66	
6,121.85	**Ruluff S. Choate** Scholarship,	6,127.95	
7,245.44	**Class of 1802** Scholarship,	7,287.69	
2,951.32	" **1814** "	2,948.87	
5,196.64	" **1815** " **(Kirkland),**	5,306.49	
3,791.13	" **1817** "	3,830.68	
1,656.18	" **1828** "	1,738.98	
2,726.65	" **1835** "	2,863.00	
4,080.23	" **1841** "	4,084.23	
3,879.52	" **1852** " **(Dana),**	4,073.52	
10,000.00	" **1856** "	10,000.00	
2,642.00	" **1867** "	2,774.10	
8,623.26	**Crowninshield** "	9,054.41	
600.00	**Warren H. Cudworth** Scholarships,	600.00	
5,341.25	**Derby** Scholars'p **(George & Martha),**	5,358.30	
5,311.31	**W. S. Eliot** Scholarship,	5,326.86	
5,854.64	**Farrar** "	5,847.39	
2,768.15	**Greene** "	2,906.55	
5,692.46	**Levina Hoar** "	5,727.06	
8,275.12	**Hodges** "	8,688.87	
5,155.92	**Hollis** "	5,213.72	
2,550.63	**Matthews** " (balance),	2,411.22	
	Merrick "	5,052.10	
7,495.79	**Morey** "	7,488.19	
6,657.78	**Pennoyer** "	6,665.93	
2,802.07	**Perkins** "	2,942.17	
$1,734,581.08	Amounts carried forward,	$1,117,072.12	$889,882.75

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
$1,734,581.08	. . . Amounts brought forward,	$1,117,072.12	$889,882.75
747.44	Rodger Scholarship, ...	784.79	
3,250.45	Henry B. Rogers Scholarship, . .	3,262.95	
1,943.43	Edward Russell " . .	2,250.58	
4,997.82	Saltonstall Sch. (Mary & Leverett),	5,247.72	
825.50	" " (Dorothy), . . .	866.80	
3,164.17	Sever Scholarship, ...	3,172.37	
9,516.45	Sewall "	9,592.25	
45,967.29	Shattuck "	46,065.64	
5,564.18	Slade "	5,592.38	
2,888.09	Story "	3,032.49	
2,320.49	Stoughton "	2,365.79	
	Thayer " (balance), .	116.66	
4,030.01	Gorham Thomas "	4,031.51	
6,828.99	Toppan "	6,870.44	
24,389.96	Townsend "	24,409.46	
3,988.10	Walcott "	3,987.50	
10,171.53	Whiting "	10,180.13	
9,848.84	Exhibitions, ...	9,841.29	
1,795.79	Palfrey Exhibition, ...	1,795.59	
1,200.00	Samuel Ward Fund, ...	1,200.00	
1,375.41	John Glover "	1,444.16	
10,991.83	Quincy Tufts "	10,981.43	
5,360.93	Day "	5,353.98	
10,374.66	Munroe "	10,363.41	
2,970.94	Price Greenleaf Aid, ...	10,493.65	
4,199.08	Boylston Prizes for Elocution, . .	4,154.03	
12,396.93	Bowdoin Prizes for Dissertations, .	12,716.78	
1,134.38	Hopkins Gift for "Deturs," . . .	1,163.41	
589.01	Chauncey Wright Fund, ...	618.46	
15,580.92	John E. Thayer "	15,402.19	
	Classical Publ. Fd. of Class of 1856,	6,025.00	
42,203.67	Botanic Department Fund, ...	42,650.85	
53,882.31	Lowell Fund for a Botanic Garden, .	54,882.31	
20,614.83	Herbarium Fund, ...	20,067.19	
	Carey Building Fund, ...	25,780.55	
19,343.64	Botanical Building Fund, ...	19,093.10	
75,000.00	Physical Laboratory Endowment, . .	75,000.00	
3,367.73	Jefferson Physical Laboratory, . .	1,718.31	
755.30	Fund for Religious Services, . . .	793.05	
1,491.01	Sundry Gifts (unexpended balances),	880.33	1,581,270.65

LIBRARY FUNDS.

100,000.00	Eben Wright Fund, ...	100,000.00	
26,471.78	Constantius Fund, ...	26,445.10	
500.00	Jarvis Fund	500.00	
7,472.25	Daniel Treadwell Fund, ...	9,172.25	
10,711.92	Subscription for Library, ...	10,571.24	
$2,304,808.14	. . . . . Amounts carried forward,	$146,688.59	$2,471,153.40

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
$2,304,808.14	. . . . . Amounts brought forward,	$146,688.59	$2,471,153.40
2,106.66	**Bowditch** Fund,	2,122.56	
341.72	**Bright** “	97.10	
5,543.80	**Denny** “	5,330.02	
5,671.81	**Farrar** “	5,673.74	
3,179.78	**Haven** “	3,171.90	
10,142.08	**Hayes** “	10,245.00	
5,289.48	**Hayward** “	5,344.23	
2,349.82	**Hollis** “	2,347.46	
2,104.38	**Homer** “	2,102.24	
5,356.96	**Lane** “	5,415.88	
21,667.05	**Lowell** “	21,938.80	
60,095.58	**Minot** “	60,123.27	
7,189.78	**Osgood** “ (Mary),	7,205.64	
7,299.15	“ “ (Lucy),	7,286.82	
5,328.47	**Salisbury** “	5,365.52	
20,120.07	**Sever** “	20,126.00	
4,103.93	**Shapleigh** “	4,029.87	
37,431.90	**Sumner** “	37,360.58	
5,107.23	**Tucker** “	5,135.35	
5,456.82	**Ward** “	5,430.41	
274.15	**Wales** “	340.00	
15,898.54	**Walker** “	15,942.60	
1,038.25	**Waterston** “	831.44	
563.82	Sundry gifts, etc. (unexpended balances),	273.03	379,928.05

DIVINITY SCHOOL FUNDS.

29,121.62	General Fund,	29,758.15	
37,583.74	**Bussey** Professorship,	37,583.74	
16,015.81	**Parkman** “	16,015.81	
6,008.43	**Hancock** “	6,008.43	
46,845.73	**Winn** Prof. of Ecclesiastical History,	47,345.73	
20,280.38	**Dexter** Lectureship,	20,280.38	
9,184.69	**Henry Lienow** Fund,	9,184.69	
5,250.00	**Mary P. Townsend** “	5,250.00	
2,100.00	**Winthrop Ward** “	2,100.00	
1,050.00	**Samuel Hoar** “	1,050.00	
1,050.00	**Abraham W. Fuller** “	1,050.00	
1,050.00	**Caroline Merriam** “	1,050.00	
7,875.00	**Joseph Baker** “	7,875.00	
40,000.00	**Th. Tileston** of New York Endowm't,	40,000.00	
10,000.00	**Henry P. Kidder** Fund,	10,000.00	
17,000.00	**Oliver Ames** Fund,	17,000.00	
1,000.00	**Abby Crocker Richmond** Fund,	1,000.00	
71,127.02	New Endowment,	71,427.02	
	John W. Quinby Fund,	1,175.00	
13,341.92	**Jackson** Foundation,	13,849.02	
5,091.44	**Thomas Cary** Scholarships,	5,170.99	
$2,879,445.15	. . . . . Amounts carried forward,	$344,173.96	$2,851,081.45

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
$2,879,445.15	. . . . Amounts brought forward,	$344,178.96	$2,851,081.45
2,819.29	**George Chapman** Scholarship, .	2,435.24	
3,675.79	**Joshua Clapp** " . .	3,859.59	
4,061.94	**J. Henry Kendall** " . .	4,265.04	
3,145.76	**Nancy Kendall** " . .	3,303.06	
12,061.88	**Abner W. Buttrick** Fund, . . .	12,614.93	
911.34	**Lewis Gould** " . . .	911.34	
2,177.95	**Joshua Clapp** " . . .	2,177.95	
1,050.00	**William Pomroy** " . . .	1,050.00	
525.00	**Hannah C. Andrews** " . . .	525.00	
1,000.00	**Adams Ayer** " . . .	1,000.00	
890.00	**Daniel Austin** " . . .	890.00	
2,168.70	Beneficiary money returned, . . .	2,277.15	
5,709.88	Library Building Fund, ...		
			379,483.26

LAW SCHOOL FUNDS.

5,521.64	Law School (balance), ...	13,812.83	
15,750.00	**Dane** Professorship, ...	15,750.00	
23,979.82	**Bussey** "	23,979.82	
8,340.81	**Royall** "	8,340.81	
94,436.15	New "	94,657.95	
32,021.25	Law School Book Fund, ...	32,021.25	188,562.66

LAWRENCE SCIENTIFIC SCHOOL, AND MUSEUM OF COMPARATIVE ZOÖLOGY FUNDS.

	Lawrence Scientific School (balance),	214.19	
38,807.17	Professorship of Engineering, . .	38,807.17	
61,536,43	**Abbott Lawrence** Fund, ...	61,536.43	
50,375.00	**James Lawrence** "	50,375.00	
30,686.85	**John B. Barringer** "	30,686.85	
100,100.00	**Sturgis Hooper** "	100,000.00	
50,000.00	**Gray** Fund for Zoölogical Museum,	50,000.00	
297,933.10	**Agassiz Memorial** Fund, } . .	297,933.10	
7,594.01	Teachers' and Pupils' " } . .	7,594.01	
117,469.34	Permanent Fund, ...	117,469.34	
7,740.66	**Humboldt** "	7,740.66	
			762,356.75

MEDICAL SCHOOL FUNDS.

56,449.31	Medical School (balance), ...	56,606.74	
19,192.65	**Jackson** Medical Fund, ...	19,192.65	
17,129.20	**Geo. C. Shattuck** "	17,129.20	
13,130.81	**Warren** Fund for Anatom'l Museum,	12,812.16	
3,884.30	**Boylston** Fund for Medical Prizes,	4,076.25	
2,951.08	" " " " Books,	3,098.63	
2,235.85	Medical Library Fund, ...	2,168.01	
2,000.00	**Quincy Tufts** Medical Fund, . .	2,000.00	
25,512.68	**Edward M. Barringer** " . .	25,512.68	
$4,003,920.74	. . . . . Amounts carried forward,	$142,596.32	$4,181,484.12

Principal, Sept. 1, 1887.		Principal, July 31, 1888.	
$4,003,920.74	. . . . Amounts brought forward,	$142,596.32	$4,181,484.12
15,765.11	**Mary W. Swett** Fund, ...	15,765.11	
20,000.00	**Samuel W. Swett** "	20,000.00	
1,826.08	**Samuel E. Fitz** "	1,826.08	
236.72	**Foster** Fund for Medical Students,	307.17	180,494.68

OBSERVATORY FUNDS.

	Observatory (balance), ...	2,183.40	
110,293.88	**Edward B. Phillips** Fund, . . .	110,293.88	
21,000.00	**James Hayward** " . . .	21,000.00	
25,570.32	**David Sears** " . . .	26,209.57	
11,780.61	**Josiah Quincy** " . . .	11,555.39	
2,000.00	**Charlotte Harris** " . . .	2,000.00	
5,000.00	**Thomas G. Appleton** " . . .	5,000.00	
13,380.00	**Augustus Story** Fund, ...	13,380.00	
48,600.00	Observatory Endowment, ...	50,000.00	
117,787.59	**Robert Treat Paine** Fund, . .	118,285.99	
50,000.00	**Paine** Professorship, ...	50,000.00	
238,736.22	**Uriah A. Boyden** Fund, ...	240,995.50	
1,592.59	**Draper Memorial** (balance), . .	488.01	651,391.74

OTHER FUNDS FOR SPECIAL PURPOSES.

413,092.80	**Bussey** Trust (income thereof, ½ to Bussey Institution, ¼ to Law School, and ¼ to Divinity School), . . .	413,092.80	
1,623.65	Bussey Institution, ...	4,793.62	
609.02	**Bussey** Building Fund, ...	609.02	
153,690.61	**James Arnold** "	154,074.84	
3,909.92	Arnold Arboretum "	4,390.63	
50,000.00	**Bright** Legacy, ...	50,000.00	
32,164.71	**Robert Troup Paine** Fund, . . .	33,553.04	
42,000.00	**James Savage** Fund, ...	42,000.00	
3,171.50	**John Foster** "	3,171.50	
29,939.33	**Henry Harris** "	29,939.33	
16,391.90	**Gray** Fund for Engravings, . . .	16,395.43	
3,272.78	**Gospel Church** Fund, ...	3,436.43	
2,625.00	Fund of the **Class of 1853**, . . .	2,625.00	
1,000.00	" " " " " **1834**, . . .	1,000.00	
	Walter Hastings Building Fund, .	197,375.32	
629,955.00	**Price Greenleaf** Fund, ...	689,984.74	
22,628.83	**Gore** Annuity Fund, ...	23,160.28	
5,485.58	**Lucy Osgood** Annuity Fund, . .	5,339.88	
50,770.81	**Bemis** Annuity Fund, ...	50,736.86	
2,105.85	Dental Subscription Fund, . . .	2,155.85	1,727,834.57

FUNDS IN TRUST FOR PURPOSES NOT CONNECTED WITH THE COLLEGE.

15,953.74	**Daniel Williams** Fund for the conversion of the Indians, ...	15,932.55	
4,810.59	**Sarah Winslow** F'd., for the Minister and Teacher at Tyngsborough, Mass.,	4,805.57	20,738.12
$6,172,691.48			$6,761,943.23

Changes in the Funds during the eleven months ending July 31, 1888.

Total amount of Funds and balances, July 31, 1888, as before stated, ...		$6,761,943.23	
Total amount of Funds and balances, September 1, 1887, as before stated, ...		6,172,691.48	
Showing a total increase during the year of . . .			$589,251.75
Which is made up as follows : —			
Gifts forming new Funds or increasing old ones, .		330,180.09	
Increase of Funds established during the year, . .		2,901.46	
Credit balances created " " " . .		225,620.12	
Increase of Fund by gain from change of investment,		29.74	
Increase of Stock Account, by excess of income over expenditure in College, Library, and University accounts, ...		3,130.05	
Other increase more than decrease of Funds and balances, which appear both at the beginning and end of the year, ...		33,654.39	
		$595,515.85	
Deduct from this amount			
Decrease of Funds established during the year,	$86.35		
Funds and balances used up, ...	6,177.75	6,264.10	
			$589.251.75

Net increase of Funds and balances as above, . . .	$265,335.76
Less decrease as above, ...	6,264.10
Leaving amount of the net increase of the Funds and balances, excluding gifts for capital account, as is also shown in the following table, ...	$259,071.66

Statement showing Changes in the Differen

Increase of Funds which appear both at the beginning and the end of the year, being the excess of income (including gifts for immediate use) over payments towards the special objects of those Funds.

UNIVERSITY.

Stock Account,	$4,257.55	
President's Fund,	127.25	
Retiring Allowance Fund,	1,586.85	
John Parker Fellowships,	30.80	
Robert Treat Paine Fellowship,	264.85	
Harris Fellowships,	248.54	
John Thornton Kirkland Fellowship,	189.35	
James Walker Fellowship,	43.20	
John Tyndall Scholarship,	51.10	
Sumner Prize Fund,	9.25	
		$6,808.74

COLLEGE.

Daniel H. Peirce Fund,	65.45	
Paul Dudley Fund,	131.45	
John W. P. Abbott Fund,	221.05	
Abbot Scholarship,	147.05	
Alford “	46.70	
Bartlett “	13.05	
Bassett “	10.00	
Bigelow “	78.30	
Browne “	151.25	
R. S. Choate Scholarship,	6.10	
Class of 1802 “	42.25	
“ **1815** “ **(Kirkland)**,	109.85	
“ **1817** “	39.55	
“ **1828** “	82.80	
“ **1835** “	136.35	
“ **1841** “	4.00	
“ **1852** “ **(Dana)**,	194.00	
“ **1867** “	132.10	
Crowninshield “	431.15	
Derby “ **(George & Martha)**,	17.05	
W. S. Eliot “	15.55	
Greene “	138.40	
Hodges “	413.75	
Levina Hoar “	34.60	
Hollis “	57.80	
Pennoyer “	8.15	
Perkins “	140.10	
Rodger “	37.35	
Henry B. Rogers “	12.50	
Amounts carried forward,	$2,917.70	$6,808.74

Funds during the eleven months ending July 31, 1888.

Decrease of Funds, which appear both at the beginning and the end of the year, being the excess of payments over income received (including gifts for immediate use) for the special objects of those Funds.

UNIVERSITY.

Thomas Cotton Fund,	$ .14	
Rogers Fellowship,	377.15	
Dante Prizes,	50.00	
		$427.29

COLLEGE.

Henry Flynt's Bequest,	.33	
Bowditch Scholarship,	27.45	
Class of 1814 “	2.45	
Farrar “	7.25	
Matthews “	139.41	
Morey “	7.60	
Walcott “	.60	
Exhibitions,	7.55	
Palfrey Exhibition,	.20	
Quincy Tufts Fund,	10.40	
Day “	6.95	
Munroe “	11.25	
Boylston Prizes,	45.05	
John E. Thayer Fund,	178.73	
Herbarium “	547.64	
Botanical Building Fund,	250.54	
Jefferson Physical Laboratory,	1,649.42	
Sundry gifts (unexpended balances),	610.68	
		3,503.50

LIBRARY.

Constantius Fund,	26.68	
Subscription “	140.68	
Bright “	244.62	
Denny “	213.78	
Haven “	7.88	
Hollis “	2.36	
Homer “	2.14	
Osgood “ (Lucy),	12.83	
Shapleigh “	74.06	
Sumner “	71.32	
Ward “	26.41	
Waterston “	206.81	
Sundry gifts (unexpended balances),	290.79	
		1,319.86

MUSEUM OF COMPARATIVE ZOÖLOGY.

Sturgis Hooper Fund,	100.00	100.00
Amount carried forward,		$5,350.65

Statement showing Changes in the Different

INCREASE.

Amounts brought forward, . . .	$2,917.70	$6,808.74
Edward Russell Scholarship, ...	107.15	
Saltonstall " **(Mary & Leverett),**	249.90	
" " (Dorothy), ...	41.30	
Slade "	28.20	
Sever "	8.20	
Sewall "	75.80	
Shattuck "	98.35	
Story "	144.40	
Stoughton "	45.30	
Gorham Thomas "	1.50	
Toppan "	41.45	
Townsend "	19.50	
Whiting "	8.60	
John Glover Fund, ...	68.75	
Price Greenleaf Aid, ...	7,522.71	
Bowdoin Prizes, ...	319.85	
Hopkins Gift for "Deturs,"	29.03	
Chauncey Wright Fund, ...	29.45	
Botanic Department, ...	447.18	
Fund for Religious Services, ...	37.75	
		12,242.07

LIBRARY.

Bowditch Fund, ...	15.90	
Farrar "	1.93	
Hayes "	102.92	
Hayward "	54.75	
Lane "	58.92	
Lowell "	271.75	
Minot "	27.69	
Osgood " **(Mary),**	15.86	
Salisbury "	37.05	
Sever "	5.93	
Tucker "	28.12	
Wales "	65.85	
Walker "	44.06	
		730.73

DIVINITY SCHOOL.

General Fund, ...	636.53	
Winn Professorship, ...	500.00	
Jackson Foundation, ...	507.10	
Thomas Cary Scholarship, ...	79.55	
George Chapman "	115.95	
Joshua Clapp "	183.80	
J. H. Kendall "	203.10	
Nancy Kendall "	157.30	
A. W. Buttrick Fund, ...	553.10	
Beneficiary money returned, ...	108.45	
		3,044.88
Amount carried forward, ...		$22,826.42

Funds during the eleven months ending July 31, 1888. (Cont'd.)

DECREASE.

Amount brought forward, . . .		$5,350.65
MEDICAL SCHOOL.		
Warren Fund for Anatomical Museum, ...	318.65	
Library Fund, ...	67.84	386.49
OBSERVATORY.		
Josiah Quincy Fund, ...	225.22	
Draper Memorial, ...	1,104.58	1,329.80
FUNDS FOR SPECIAL PURPOSES.		
Lucy Osgood Annuity Fund, ...	145.70	
Bemis " "	33.95	
Daniel Williams "	21.19	
Sarah Winslow "	5.02	205.86
		$7,272.80
Decrease of Funds established during the year.		
Walter Hastings Fund, ...		86.35
Sundry balances used up.		
John O. Sargent Prizes, ...	100.00	
Peter C. Brooks Fund, ...	367.87	
Divinity Library Building Fund, ...	5,709.88	6,177.75
Balance, which is the net increase of the Funds and balances for the eleven months ending July 31, 1888, excluding gifts for capital account, ...		259,071.66

Amount carried forward, ... $272,608.56

Statement showing Changes in the Different

INCREASE.

Amount brought forward, . . .		$22,826.42
LAW SCHOOL.		
General Fund, ...	$8,291.19	
New Professorship, ...	221.80	8,512.99
MEDICAL SCHOOL.		
General Fund, ...	157.43	
Boylston Medical Prizes, ...	191.95	
" " Books, ...	147.55	
Foster Fund for Medical Students, ...	70.45	567.38
OBSERVATORY.		
David Sears Fund, ...	639.25	
Uriah A. Boyden Fund, ...	2,259.28	2,898.53
FUNDS FOR SPECIAL PURPOSES.		
Robert Troup Paine Fund, ...	1,388.33	
Bussey Institution, ...	3,169.97	
James Arnold Fund, ...	384.23	
Arnold Arboretum, ...	480.71	
Gray Fund for Engravings, ...	3.53	
Gore Annuity Fund, ...	531.45	
Gospel Church "	163.65	6,121.87
		$40,927.19
Increase of Funds established during the year.		
Gurney Fund, ...	2,824.36	
William Merrick Scholarship, ...	52.10	
Classical Publication Fund of the **Class of 1856**,	25.00	2,901.46
Credit balances created.		
Observatory, ...	2,183.40	
Lawrence Scientific School, ...	214.19	
Thayer Scholarships, ...	116.66	
Walter Hastings Building Fund, ...	197,375.32	
Carey Building Fund, ...	25,730.55	225,620.12
Price Greenleaf Fund, gain from change of special investment, ...		29.74
Increase of Stock Account by surplus of income over expenditures, in College, Library, and University Accounts, ...		3,130.05
Total, ...		$272,608.56

Funds during the eleven months ending July 31, 1888. (Cont'd.)

DECREASE.

Amount brought forward, ...	$272,608.56
Total, ...	$272,608.56

The following tables are not found, in their present form, in the Treasurer's books. They are intended to exhibit with some detail the resources and the expenditures of each department of the University. The income of every fund held by the University is given in these tables, and also the sum paid out for the specific object of each and every fund, in case that sum be either less or more than the actual income of the fund. If the object to which the income of a fund is to be applied be a general one, — like salaries, for example,— no separate mention is made in these tables of that appropriation. That particular payment is merged with others of the same kind under the general heading. A balanced summary of these tables will be found on page 57.

Table No. I.

THE UNIVERSITY.

RECEIPTS.

Income of the unappropriated fund heretofore called the Stock Account, at present accumulating,		$4,257.55	
Income of the following funds: —			
Insurance and Guaranty,		6,256.95	
Israel Munson,		787.50	
Leonard Jarvis,		843.60	
Samuel D. Bradford,		262.50	
Sever,		450.00	
John C. Gray,		1,250.00	
George B. Dorr,		5,798.35	
Seth Turner,		250.00	
Henry T. Morgan.		4,097.20	
Henry Harris, ½ of income,		748.47	
Francis E. Parker. Interest,	$4,950		
From special investment,	220	5,170.00	
John Cowdin, from special investment,		722.97	
Walter Hastings, from special investment,		319.99	
Peter C. Brooks,		18.40	
Thomas Cotton,		7.35	
President's,		3,127.25	
Parker Fellowships,		2,830.80	
John Thornton Kirkland Fellowship,		564.35	
Harris Fellowship,		527.60	
James Walker Fellowship,		548.20	
Rogers Fellowships,		1,597.85	
Robert Treat Paine Fellowship,		514.85	
John Tyndall Scholarship,		551.10	
Sumner Prize,		109.25	
Retiring Allowance,		1,586.85	
			43,193.93
For care of the **Sarah Winslow** Fund,		6.13	
Sale of Quinquennial Catalogues,		28.50	
Sale of Anniversary volume,		89.75	
" Catalogues, Calendars, and Directories,		813.18	
Amounts carried forward,		$937.56	$43,193.93

TABLE I., CONTINUED.

RECEIPTS.

Amounts brought forward, . . .	$937.56	$43,193.93
Balance remaining after dividing the net income among the Funds, ...	311.61	
For examination fee for degree of Ph.D., ...	30.00	
Use of house by College officer, ...	400.00	1,679.17
		$44,873.10

PAYMENTS.

Overseers' Expenses.		
Advertising, ...	$285.20	
Printing President's Annual Report, ...	588.57	
Printing Treasurer's " "	157.43	
Printing other reports, auditing Treasurer's accounts, &c., ...	175.00	1,206.20
Office Expenses.		
President's, ...	663.02	
Treasurer's, ...	480.58	
Bursar's, ...	1,416.49	
Supt. of Buildings, ...	6.63	
Corporation Rooms (fuel, rent, furniture, &c.), .	2,756.87	5,323.59
Salaries.		
President, ...	8,007.49	
Treasurer and Deputy Treasurer, ...	5,000.00	
Secretary of the University, ...	1,800.00	
Secretary of the Board of Overseers, ...	100.00	
Bursar, ...	3,679.16	
Bursar's Assistant, ...	1,400.00	
Clerks Treasurer's office, ...	3,300.00	
Superintendent of Buildings, ...	733.33	24,019.98
Memorial Hall and Sanders Theatre.		
Repairs, fuel, gas, &c., ...		
General Expenses.		
Advertising, ...	27.68	
Labor, &c. on grounds outside of College Yard,	1,100.22	
Subscription to Mercantile Agency, ...	200.00	
Watering streets, and water, ...	202.80	
Watchmen, ...	864.23	
Freight, diplomas, &c., ...	84.07	
Printing, ...	256.20	
Music, Commencement, ...	185.00	
Editing Anniversary Volume, ...	500.00	
Annual Catalogue and Calendar, ...	1,352.00	
Repairs and improvements, ...	455.26	
Editing Quinquennial Catalogue, ...	300.00	
Portrait of **E. Price Greenleaf**, and frame, . .	460.00	
Cambridge Fire Relief Fund, ...	25.00	
Notary commission and stamp, ...	17.00	
Extra services for Commencement, &c., ...	66.00	
Reception for Association of Mining Engineers,	37.90	6,133.36
Amount carried forward, ...		$37,149.47

Table I., continued.

PAYMENTS.

Amount brought forward, ...		$37,149.47
Fellowships.		
John Parker,	2,800.00	
Harris,	279.06	
John Thornton Kirkland,	375.00	
James Walker,	500.00	
Rogers,	1,975.00	
Morgan,	3,000.00	
Robert Treat Paine,	250.00	
John Tyndall Scholarship,	500.00	9,679.06
Prizes.		
Dante,	50.00	
Charles Sumner,	100.00	
John O. Sargent,	100.00	250.00
From the following Funds.		
Walter Hastings, repairs and improvements on Sacramento St. houses,	406.34	
Peter C. Brooks, repairs and improvements on on President's house,	386.27	792.61
		$47,871.14

Table No. II.

THE COLLEGE.

RECEIPTS.

From Term Bills.		
Instruction,	$173,951.18	
Rents available for general expenses,	34,297.60	
Income of Scholarship Funds.		208,248.78
Abbot (accumulating),	147.05	
Alford (accumulating),	46.70	
Bartlett,	263.05	
Bassett,	280.00	
Bigelow,	578.30	
Bowditch,	5,472.55	
Bright, ½ income of **Bright** Legacy,	1,250.00	
Browne (accumulating),	151.25	
Ruluff Sterling Choate,	306.10	
Class of 1802,	362.25	
" **1814**,	147.55	
" **1815 (Kirkland)**,	259.85	
" **1817**,	189.55	
" **1828** (accumulating),	82.80	
" **1835** (accumulating),	136.35	
" **1841**,	204.00	
" **1852 (Dana)** (accumulating),	194.00	
" **1856**, from special investment,	600.00	
Amounts carried forward,	$10,671.35	$208,248.78

TABLE II., CONTINUED.

RECEIPTS.

Amounts brought forward,		$10,671.35	$208,248.78
Class of 1867 (accumulating),		132.10	
Warren H. Cudworth,		600.00	
Crowninshield (accumulating),		431.15	
George and **Martha Derby,**		267.05	
Wm. Samuel Eliot,		265.55	
Farrar,		292.75	
Greene (accumulating),		138.40	
Price Greenleaf,		3,000.00	
Levina Hoar (Town of Lincoln),		284.60	
Hodges (accumulating),		413.75	
Hollis,		257.80	
George Emerson Lowell,		400.00	
Matthews (½ of net rents of Hall),		4,360.59	
William Merrick,		52.10	
Morey,		374.80	
Pennoyer. Interest,	$110.65		
Annuity,	277.50	388.15	
Perkins (accumulating),		140.10	
Rodger (accumulating),		37.35	
Henry Bromfield Rogers.		162.50	
Edward Russell (accumulating),		107.15	
Mary and **Leverett Saltonstall,**		249.90	
Dorothy Saltonstall (accumulating),		41.30	
Savage,		300.00	
Sever,		158.20	
Sewall,		475.80	
Shattuck,		2,298.35	
Slade,		278.20	
Story (accumulating)		144.40	
Stoughton (accumulating),		51.30	
Gorham Thomas,		201.50	
Toppan,		341.45	
Townsend,		1,219.50	
Walcott,		199.40	
Whiting,		508.60	29,245.14
Received from the Trustee of the **Thayer** Scholarships,			3,500.00
Other Beneficiary Funds, income of.			
"Exhibitions,"		492.45	
Palfrey "Exhibition,"		89.80	
Samuel Ward. From special investment,		50.00	
John Glover (accumulating),		68.75	
Quincy Tufts,		549.60	
Moses Day,		268.05	
Munroe,		518.75	
Price Greenleaf Aid,		12,981.96	15,019.36
Amount carried forward,			$256,018.28

TABLE II., CONTINUED.

RECEIPTS.

Amount brought forward, ...		$256,013.28
Prize Funds, income of.		
Ward Nicholas Boylston Prizes for Elocution,	$209.95	
James Bowdoin Prizes for Dissertations, . .	619.85	
Edward Hopkins Gift for "Deturs," . . .	292.24	
Chauncey Wright, ...	29.45	1,151.49
Funds for Instruction.		
Income of the **Alford** Professorship, ...	$1,387.45	
Boylston "	1,416.85	
Eliot "	1,081.00	
J. Phillips's addition to **Eliot** Prof.,	500.00	
Erving Professorship, ...	175.00	
Fisher "	1,799.55	
Hersey " ⅗ inc. of the Fund,	606.51	
Hollis " (Mathematics), . .	187.35	
Hollis " (Divinity), ...	1,725.90	
McLean "	2,153.15	
Perkins "	1,050.00	
Plummer "	1,251.00	
Pope "	2,625.00	
Rumford "	2,785.74	
Smith "	1,157.00	
Fund for Permanent Tutors, ...	812.00	
Thos. Lee Fund for the Hersey Prof.	1,087.20	
" " " " Reading, . . .	789.85	
Class Subscription, ...	7,250.00	
Henry Flynt, ...	16.40	
Paul Dudley Fund (accumulating),	131.45	
Gifts for salaries, ...	2,450.00	32,438.40
Botanic Garden.		
Income of Fund, ...	2,110.20	
" " the **Lowell** Fund, ...	2,708.20	
Gifts for present use, ...	2,025.00	
Estimated value of use of house by Prof. Gray,	500.00	
Rent of house, ...	175.00	
Use of Greenhouse, &c., by Society, ...	60.00	7,578.40
Botanical Building Fund.		
Subscriptions received, ...	9,390.00	
Interest on Fund, ...	759.46	10,149.46
Subscriptions for the purchase of the Tuckerman Botanical collection, ...		3,000.00
Herbarium. Income of Fund, ...	1,030.75	
Gift for present use, ...	150.00	1,180.75
Hemenway Gymnasium.		
For use of lockers, ...	2,148.00	
Fees for use of, ...	30.00	
For use of by other departments, ...	1,498.12	3,676.12
Amount carried forward, ...		$315,187.90

TABLE II., CONTINUED.

RECEIPTS.

Amount brought forward, ...			$315,187.90
Jefferson Physical Laboratory.			
Income from Endowment, ...		$3,750.00	
Interest on unexpended balance, ...		168.40	3,918.40
Carey Building Fund, amount of gift, ...		25,000.00	
Interest on Fund, ...		730.55	25,730.55
Income of **Jonathan Phillips's** unrestricted Fund,		1,575.00	
" " **John A. Blanchard's** " "		52.50	
" " **Daniel H. Pierce** " "		654.46	
" " **J. W. P. Abbot** " (accumulating),		221.05	
" " **John E. Thayer** Fund, ...		779.05	
" " Fund for Religious Services (accumulating),		37.75	
" " **Gurney** Fund, ...		3,397.65	
" " Classical Publication Fund of the **Class of 1856**, ...		25.00	6,742.46
Sundries.			
Fees for admission examinations, &c., ...		829.00	
Sale of grass, ...		60.00	
Sale of old examination papers, ...		76.04	
For Printing by College Press for other departm'ts,		6,815.64	
For use of rooms by College officers, &c., . . .		527.50	
Sale of tickets to Commencement Dinner, . . .		515.00	
" " Chemistry and Physics pamphlets, . . .		161.50	
Insurance repaid by Societies, ...		41.67	
Laboratory fees received.			
Chemical	$4,746.05		
Physical	890.00		
Natural History, ...	1,257.50	6,893.55	15,919.90
Total receipts, ...			$367,499.21

PAYMENTS.

Paid the incumbents of the following Scholarships.	
Bartlett, ...	$250.00
Bassett, ...	270.00
Bigelow, ...	500.00
Bowditch, ...	5,500.00
Bright, ...	1,250.00
Ruluff Sterling Choate, ...	300.00
Warren H. Cudworth, ...	600.00
Class of 1802, ...	200.00
" **1814**, ...	150.00
" **1815 (Kirkland)**, ...	150.00
" **1817**, ...	150.00
" **1841**, ...	200.00
" **1856**, ...	600.00
Amount carried forward, . . .	$10,120.00

TABLE II., CONTINUED.

PAYMENTS.

Amount brought forward, . . .	$10,120.00	
George and **Martha Derby**,	250.00	
Wm. Samuel Eliot,	250.00	
Farrar,	300.00	
Price Greenleaf,	3,000.00	
Levina Hoar,	250.00	
Hollis,	200.00	
George Emerson Lowell,	400.00	
Matthews,	4,500.00	
Morey,	382.40	
Pennoyer,	380.00	
Henry Bromfield Rogers,	150.00	
Savage,	300.00	
Sever,	150.00	
Sewall,	400.00	
Shattuck,	2,200.00	
Slade,	250.00	
Thayer,	3,383.34	
Gorham Thomas,	200.00	
Toppan,	300.00	
Townsend,	1,200.00	
Walcott,	200.00	
Whiting,	500.00	$29,265.74
Paid other Beneficiaries from the following Funds.		
Exhibitions,	500.00	
Palfrey Exhibition,	90.00	
Samuel Ward Income,	50.00	
Quincy Tufts "	560.00	
Day Fund "	275.00	
Munroe Fund "	530.00	
Price Greenleaf Aid,	5,459.25	7,464.25
Prizes. **Boylston** Prizes for Elocution,	255.00	
Bowdoin Prizes for Dissertations	300.00	
"Deturs" from **Hopkins** Fund	263.21	818.21
Salaries for instruction,		162,745.10
Payments for College Edifices not valued on Treasurer's books.		
Repairs and improvements,	12,165.74	
Insurance,	137.50	12,303.24
Botanic Garden, for labor, repairs, materials, &c., . . .		7,131.22
Botanical Building Fund.		
Paid on account of construction, &c.,		10,400.00
Paid for Tuckerman Botanical collection,		3,000.00
Herbarium, for labor, repairs, and materials,		1,728.39
Hemenway Gymnasium.		
Salaries and wages,	5,660.00	
Janitors and cleaning,	1,240.88	
Gas, water, and sundries,	779.82	
Amounts carried forward,	$7,680.70	$234,856.15

TABLE II., CONTINUED.

PAYMENTS.

Amounts brought forward,		$7,680.70	$234,856.15
Fuel,		720.00	
Apparatus and repairs,		2,051.37	
Insurance,		15.00	10,467.07
Jefferson Physical Laboratory.			
Spent on building and fixtures,		2,831.95	
Insurance,		125.00	
Laboratory expenses,	$3,210.87		
Less part paid by the College,	600.00	2,610.87	5,567.82
John E. Thayer Fund,			
Expenses Quarterly Journal of Economics,			957.78
Paid from gifts for Books for Political Economy Dept.,		88.79	
" " " " " " American History "		710.50	
" " " " " " French "		71.39	870.68
Stoughton Fund, plan of estate,			6.00
General Expenses.			
Appropriations for collections and laboratories.			
Physical Apparatus (Prof. Lovering),	600.00		
Mineral and Chemical (Prof. Cooke),	800.00		
Botanical (Prof. Goodale),	200.00		
Botanical (Prof. Farlow),	200.00		
Geological (Prof. Shaler),	400.00		
Zoölogical (Prof. Mark),	184.82		
Psychology (Prof. James),	50.00		
Fine Arts (Prof. Norton),	200.00		
Geography (Asst. Prof. Davis),	100.00		
Petrography (Instructor Wolff),	245.00		
Drawing (Instructor Moore),	150.00		
Physical Laboratory (Prof. Trowbridge),	300.00		
Laboratory fees appropriated,	6,893.55		
Expenses in Nat. History Laboratories,	1,000.00	11,323.37	
Jefferson Physical Laboratory.			
Expenses paid by the College,		600.00	
Appleton Chapel.			
Preaching and morning services,	3,195.00		
Organist and Choir-master,	1,200.00		
Choir,	1,350.00		
Books, hymnals, and music,	116.30		
Fuel, Gas, Repairs, &c.,	1,293.40		
Services and wages,	151.75	7,306.45	
Admission examinations,		746.31	
Advertising,		480.47	
Cleaning and care of College buildings not valued on Treasurer's books,		8,563.62	
College Yard expenses, labor, material, &c.,		2,890.60	
Commencement Dinner,		625.60	
Dean and Registrar, services, and office expenses,		4,027.01	
Amounts carried forward,		$36,563.43	$252,725.50

TABLE II., CONTINUED.

PAYMENTS.

Amounts brought forward,	$36,563.43	$252,725.50
Fuel, &c.,	4,281.08	
Furniture,	1,232.94	
Freight, diplomas, and sundries,	412.67	
Gas,	1,277.05	
Maps,	40.00	
Music, Class-Day,	125.00	
Pews hired in Cambridge churches,	1,046.50	
Printing office, expenses,	7,741.78	
Printing reports and pamphlets,	714.83	
Services of examiners and proctors,	4,291.74	
" " undergraduates,	255.82	
" in Chemical Laboratory (part of),	396.63	
Supplies, tools, and materials,	260.53	
Watchmen,	470.50	
Water rates,	421.96	59,532.46
Total payments,		$312,257.96

TABLE No. III.

THE LIBRARY.

RECEIPTS.

Income of the following Funds for the purchase of books.

Subscription for Library,		$535.60
Nathaniel I. Bowditch,		105.35
Bright, ½ income of the **Bright** Legacy,	$1,250.00	
Interest on balance,	17.01	1,267.10
Constantius, ½ of income for the purchase of books,		661.80
Denny,		277.20
Eliza Farrar,		283.60
Horace A. Haven,		159.00
Francis B. Hayes,		507.10
George Hayward,		264.45
Thomas Hollis,		117.50
Sidney Homer,		105.20
Frederick A. Lane,		267.85
Lowell,		1,083.35
Charles Minot. From special investm't,	$4,200.00	
Interest on unexpended balance,	4.80	4,204.80
Lucy Osgood,		364.95
Mary Osgood,		359.50
Stephen Salisbury,		266.40
Sever,		1,006.00
Samuel Shapleigh,		205.20
Charles Sumner,		1,871.60
Amount carried forward,		$13,913.55

TABLE III., CONTINUED.

RECEIPTS.

Amount brought forward, . . .		$13,913.55	
Ichabod Tucker. From special investm't,	$200.00		
Interest on unexpended balance,	5.35	205.35	
George W. Wales. Gift, ...	200.00		
Interest on unexpended balance,	13.70	213.70	
James Walker, ...		794.95	
Thomas W. Ward, ...		272.85	
Executors of **Robert Waterston.**			
Interest on unexpended balance, . . .		51.90	$15,452.30
Gift from Dante Society, ...		50.00	
Sale of duplicates, &c., ...		230.21	280.21
James Savage Fund for general expenses (¾ of income),		1,350.00	
Constantius " " " ½ " "		661.80	
Daniel Treadwell " " "		440.90	
Daniel Austin " " "		311.50	
Eben Wright " " "		5,000.00	
Jarvis " " "		25.00	
Price Greenleaf " " "		12,981.96	20,771.16
Fees for use of Library, ...		155.00	
Sales of Bulletins and Catalogues, ...		16.00	171.00
			$36,674.67

PAYMENTS.

For Books from		
Subscription Fund, ...	$676.28	
Bowditch "	97.45	
Bright "	1,511.72	
Constantius "	688.48	
Denny "	490.98	
Farrar "	281.67	
Haven "	166.88	
Hayes "	404.18	
Hayward "	209.70	
Hollis "	119.86	
Homer "	107.34	
Lane "	208.93	
Lowell "	811.60	
Minot "	4,267.11	
Lucy Osgood "	377.28	
Mary Osgood "	343.64	
Salisbury "	229.35	
Sever "	1,000.07	
Shapleigh "	279.26	
Sumner "	1,942.92	
Tucker "	177.23	
Wales "	147.85	
Walker "	750.89	
Ward "	299.26	
Waterston "	258.71	
Dante Society money, ...	80.29	
Duplicate money, ...	132.71	
Amount carried forward, ...		$16,061.64

TABLE III., CONTINUED.

PAYMENTS.

Amount brought forward,		$16,061.64
Salaries and wages,	$19,465.07	
Binding,	1,161.83	
Stationery, postage, &c.,	274.98	
Fuel,	987.08	
Repairs and improvements,	993.31	
Freight, water, and sundries,	399.67	
Janitors and cleaning,	620.04	
Furniture,	573.12	
Bulletins, and other printing,	1,832.46	26,307.56
		$42,369.20

TABLE No. IV.

DIVINITY SCHOOL.

RECEIPTS.

Income of the following Funds applicable to Salaries.		
General Fund,	$1,456.10	
Benjamin Bussey Professorship,	1,879.20	
Parkman Professorship,	800.80	
John Hancock Professorship,	800.40	
Winn Professorship of Ecclesiastical History,	2,342.30	
Samuel Dexter,	1,014.00	
Henry Lienow,	459.25	
Mary P. Townsend,	262.50	
Winthrop Ward,	105.00	
Samuel Hoar,	52.50	
Abraham W. Fuller,	52.50	
Caroline Merriam,	52.50	
Joseph Baker,	393.75	
Thomas Tileston of New York Endowment,	2,000.00	
Oliver Ames,	850.00	
Henry P. Kidder,	500.00	
Abby Crocker Richmond,	50.00	
New Endowment,	3,557.60	16,128.40
Income of Scholarship Funds.		
Jackson Foundation,	667.10	
Thomas Cary,	254.55	
George Chapman,	115.95	
Joshua Clapp,	183.80	
J. Henry Kendall,	203.10	
Nancy Kendall,	157.30	1,581.80
Income of other Funds.		
Joshua Clapp,	108.90	
William Pomroy,	52.50	
Hannah C. Andrews,	26.25	
Amounts carried forward,	$187.65	$17,710.20

TABLE IV., CONTINUED.

RECEIPTS.

Amounts brought forward,	$187.65	$17,710.20
Lewis Gould,	45.55	
Daniel Austin,	44.50	
Abner W. Buttrick,	603.10	
Adams Ayer,	50.00	
Interest on Beneficiary money returned,	108.45	1,039.25
Benjamin Bussey Trust (½ of net income for use of this School),		3,856.54
Term Bills.		
For Instruction,	1,039.75	
For Rents,	2,063.34	3,103.09
Library Building Fund, subscriptions received,	6,078.09	
Sale of book cases given by **Mrs. Ezra Abbot**,	21.00	
" duplicate books,	568.06	
Insurance for fire in Janitor's house,	174.00	6,841.15
		$32,550.23

PAYMENTS.

For Salaries for Instruction,	$19,084.10	
Services and wages,	711.02	
Labor, repairs, and improvements,	544.20	
Cleaning and care of rooms,	891.96	
Books and binding,	284.65	
Printing,	49.25	
Fuel, gas, and water,	861.93	
Stationery, postage, diplomas, and sundries,	98.09	
Collation,	75.00	
Furniture,	8.73	
Insurance,	90.00	
Proportion of expenses of Gymnasium,	95.50	
Advertising,	84.00	
Account of new Library building,	11,951.80	34,830.23
Paid the incumbents of the following Scholarships.		
Jackson Foundation,	160.00	
Thomas Cary,	175.00	335.00
Paid beneficiary from the **A. W. Buttrick** Fund,		50.00
		$35,215.23

TABLE No. V.

LAW SCHOOL.

RECEIPTS.

Income of the following Funds.	
Law School, balance,	$276.10
Nathan Dane Professorship,	787.50
Benjamin Bussey "	1,199.00
Amount carried forward,	$2,262.60

TABLE V., CONTINUED.

RECEIPTS.

Amount brought forward, . .	$2,262.60	
Isaac Royall Professorship, ...	417.05	
New Professorship, ...	4,721.80	
Law School Book Fund, ...	1,601.05	
Benjamin Bussey Trust (¼ of net income for use of this School), ...	3,856.54	$12,859.04
Term Bills.		
For instruction, ...		31,292.86
Sale of Book, ...		.70
Gift from Harvard Law School Association to increase the instruction in Constitutional Law, ...		1,000.00
		$45,521.60

PAYMENTS.

For Salaries for Instruction, ...	$21,550.00	
Librarian and Assistants, ...	3,624.52	
Janitors, cleaning, &c., ...	855.00	
Books and binding, ...	2,143.04	
Fuel, ...	1,083.82	
Gas, ...	625.05	
Printing	470.85	
Scholarships, ...	1,150.00	
Labor, repairs, and improvements, ...	511.38	
Stationery and postage, ...	446.12	
Freight, diplomas, and sundries, ...	198.16	
Water rates, ...	42.59	
Furniture, ...	154.01	
Services of examiners and proctors, ...	93.25	
Proportion of expenses of Gymnasium, ...	1,283.20	
Insurance, ...	735.00	
Catalogue of officers and students from 1817 to 1887,	1,673.62	$36,639.61

TABLE No. VI.

MEDICAL SCHOOL.

RECEIPTS.

Income of the following Funds.	
Medical School, balance, ...	$2,822.45
Jackson, ...	959.65
Warren, for Anatomical Museum, ...	656.55
Ward Nicholas Boylston, for Medical Prizes, .	194.20
Ward Nicholas Boylston, for Medical Books,	147.55
George C. Shattuck, ...	856.45
Hersey Professorship, ⅗ income of the fund, . .	404.34
Medical Library Fund, ...	111.80
Quincy Tufts, ...	100.00
Amount carried forward, . .	$6,252.99

TABLE VI., CONTINUED.

RECEIPTS.

Amount brought forward,		$6,252.99	
Edward M. Barringer,		1,275.65	
Henry Harris, ½ of income,		748.48	
Mary W. Swett,		788.25	
Samuel W. Swett,		1,000.00	
Samuel E. Fitz,		91.30	
Foster Fund for Medical Students.			
Interest on unexpended balance,	$11.85		
Income of **John Foster** Fd. every 2d y'r,	158.60	170.45	$10,327.12
From students for instruction,		51,358.00	
" " for graduation fees,		2,160.00	
" " in Chemical Laboratory, breakage and chemicals,		1,451.81	
" " in Practical Anatomy, for use of material,		582.00	
" " for extra examination fees,		144.00	55,695.81
From Dental and Veterinary Schools for Laboratory instruction,			320.00
Repayment of advances for the purchase of microscopes,			85.00
			$66,427.93

PAYMENTS.

Boylston Medical Prizes.			
Advertising,		$2.25	
Warren Anatomical Museum.			
Expenses and additions to collection,		975.20	
Edward M. Barringer, Scholarship No. 1,	$300.00		
" " 2,	200.00	500.00	$1,477.45
Chemical Laboratory,		1,951.87	
Physiological Laboratory,		400.00	
Anatomy,		1,982.10	
Pathological Laboratory,		154.35	
Bacteriological Laboratory,		204.17	
Obstetrics,		401.78	
Histology and Embryology,		290.00	
Materia Medica,		342.75	
Bandaging,		58.00	
Operative Surgery,		23.46	
Hygiene,		157.01	
Rabies,		2.75	
On account of **Mrs. Jeffrey Richardson's** gift for Obstetrical Department,		270.92	
Salaries for instruction,		45,775.00	
Repairs and improvements,		1,077.45	
Faculty Scholarships,		800.00	
Beneficiaries from **Foster** income,		100.00	53,991.61
Amount carried forward,			$55,469.06

TABLE VI., CONTINUED.

PAYMENTS.

Amount brought forward, ...		$55,469.06
General Expenses.		
Advertising and catalogues, ...	$1,134.75	
Books, from Library Fund, ...	179.64	
" " General "	12.00	
Fuel, ...	592.11	
Gas, ...	868.30	
Insurance, ...	945.00	
Printing, ...	288.76	
Services and wages, ...	2,296.00	
Stationery, postage, and sundries, ...	171.10	
Water rates, ...	493.20	
Furniture, ...	361.83	
Janitors and cleaning, ...	3,007.80	
Legal services, ...	38.09	
Freight, diplomas, &c., ...	172.52	
Supplies, tools, and material, ...	216.88	10,777.98
		$66,247.04

TABLE No. VII.

DENTAL SCHOOL.

RECEIPTS.

Income of Subscription Fund, ...		$105.90	
Term bills, for instruction, ...		5,380.00	
Fees from Infirmary, ...	$1,768.87		
" " Laboratory, ...	338.50	2,107.37	
Gifts for present use, ...		135.00	
Sale of old metals, ...		35.00	
			$7,763.27

PAYMENTS.

Advertising and catalogues, ...	$279.06	
Care of rooms and cleaning, ...	752.46	
Freight, Diplomas, &c., ...	32.20	
Fuel, ...	268.13	
Gas, ...	100.88	
Supplies, apparatus, &c., ...	1,020.33	
Interest on debt, ...	363.08	
Printing, ...	25.75	
Repairs and improvements, ...	82.27	
Salaries for instruction, ...	3,000.00	
Stationery and postage, ...	125.15	
Water rates, ...	74.20	
Medical School, for Laboratory instruction, ...	150.00	
		$6,273.51

TABLE No. VIII.

LAWRENCE SCIENTIFIC SCHOOL, AND MUSEUM OF COMPARATIVE ZOÖLOGY.

RECEIPTS.

Income of the following Funds.			
Professorship of Engineering,		$1,940.35	
Abbott Lawrence,		3,076.80	
James Lawrence,		2,518.75	
John B. Barringer,		1,534.35	
Gray Fund for Zoölogical Museum,		2,500.00	
Sturgis Hooper,		5,000.00	
Agassiz Memorial. Interest,	$14,587.65		
From special investment,	269.50	14,857.15	
Teachers and Pupils,		379.70	
Humboldt,		387.05	
Permanent Fund for Museum of Zoölogy,		5,873.45	
			$38,067.60
Term Bills, for Instruction,			3,243.71
			$41,311.31

PAYMENTS.

Paid on the order of the Faculty of the Museum of Comparative Zoölogy, from the following Funds.		
Gray,	$2,500.00	
Agassiz Memorial, general expenses,	8,388.81	
" " advances repaid,	6,468.34	
Teachers and Pupils,	379.70	
Humboldt,	387.05	
Permanent,	5,873.45	
Sturgis Hooper.		
Professor of Geology,	5,000.00	
Expenses in Geology,	100.00	
		$29,097.35
Salaries for instruction,	9,526.53	
Instruments and apparatus,	5.22	
Books, Engineering Department,	100.00	
Books and Binding,	113.10	
Printing,	14.50	
Fuel,	208.15	
Gas, freight, and sundries,	37.72	
Janitor and cleaning,	238.50	
Labor and repairs,	152.59	
Expenses Chemical Laboratory (part of),	293.72	
Scholarships,	1,200.00	
Water rates,	27.07	
Proportion of expenses of Gymnasium,	119.42	
Furniture,	63.25	
		12,099.77
		$41,197.12

TABLE No. IX.

OBSERVATORY.

RECEIPTS.

Income of the following Funds.			
Edward B. Phillips,		$5,514.70	
James Hayward,		1,050.00	
Robert Treat Paine. Interest,	$5,558.05		
From special investment,	350.00	5,908.05	
Paine Professorship of Practical Astronomy,		2,500.00	
Uriah A. Boyden,		11,936.75	
Augustus Story,		669.00	
David Sears,		1,278.50	
Josiah Quincy,		589.05	
James Savage (½ of net income),		450.00	
Charlotte Harris,		100.00	
Thomas G. Appleton,		250.00	
New Endowment,		2,462.90	$32,708.95
From sale of time signals,		3,012.50	
" " " Observatory publications,		25.55	
" " " grass,		25.00	3,063.05
Mrs. Henry Draper, on account of gift for special research (additional),		4,000.00	
Interest on unexpended balance,		79.65	4,079.65
			$39,851.65

PAYMENTS.

From the following Funds.		
Uriah A. Boyden, supplies, apparatus, services, &c.,	$9,677.47	
Draper Memorial, supplies, apparatus, services, &c.,	5,184.23	
Josiah Quincy, printing,	839.82	$15,701.52
Salaries and wages,	14,252.98	
Cleaning and care of Observatory,	341.74	
Gas,	48.45	
Instruments and apparatus, including repairs on same,	1,036.13	
Repairs and improvements on buildings and grounds,	991.06	
Stationery, postage, and telegraphing,	378.61	
Fuel,	138.64	
Books and binding,	638.77	
Water rates,	58.50	
Printing,	328.03	
Freight, chemicals, and sundries,	309.11	
Furniture,	66.82	
Interest on advances,	168.53	
On account of advances to Observatory Real Estate repaid,	389.74	
Supplies and materials,	103.18	
Rent of house,	90.00	
Advertising,	3.25	19,338.49
		$35,040.01

TABLE No. X.

BUSSEY INSTITUTION.

RECEIPTS.

Interest on unexpended balance,	$81.20	
From **Bussey** Trust (½ net income),	7,713.08	
From **Bussey** Building Fund,	30.45	
Fees for Instruction,	455.00	
Sale of wood, hay, and sundries,	1,137.40	
Board of horses, cattle, &c.,	924.78	$10,841.91

PAYMENTS.

For Salaries,	$4,650.00	
Books,	25.64	
Fuel for school building,	71.27	
Services and wages,	809.60	
Horticultural Department, expenses,	917.83	
Repairs and improvements,	142.70	
Grain,	296.50	
Advertising,	66.50	
Horse shoeing,	82.85	
Seeds,	15.03	
Farming tools,	74.43	
Freight, telegrams, weighing hay, &c.,	19.59	$7,171.94

James Arnold Fund.

Receipts.

Income of Fund,	$7,684.55

Payments.

19/20 of income carried to Arnold Arboretum,	$7,300.32

Arnold Arboretum.

Receipts.

Income of unexpended balance of Fund,	$195.50	
From **James Arnold** Fund,	7,300.32	
Sale of wood, grass, &c.,	500.07	
		$7,995.89

Payments.

Salary of Director and Assistant,	$3,000.00	
Expenses of Arboretum, services, labor, &c.,	4,515.18	
		$7,515.18

School of Veterinary Medicine.

Receipts.

Term bills, for instruction,	$2,611.50		
" " graduation fees,	30.00	$2,641.50	
Subscriptions to Veterinary Hospital,		810.00	
Fees from Hospital,	8,716.68		
" " Forge,	2,469.01	11,185.69	
Gift for present use,		25.00	$14,662.19

TABLE X., CONTINUED.

Payments.

Salaries and wages,	$8,384.42	
Instruments and apparatus,	145.62	
Rent,	1,280.00	
Hay, grain, supplies, &c.,	3,558.93	
Printing,	15.87	
Stationery, postage, telephone, &c.,	291.47	
Repairs and improvements,	516.13	
Fuel,	183.00	
Water,	42.80	
Gas,	117.21	
Freight, diplomas, and sundries,	146.63	
Taxes,	269.84	
Board of horses, &c. at Bussey Institution,	130.60	
Interest on advances,	854.54	
Advertising and catalogues,	122.50	
Furniture and fixtures,	9.25	
Medical School for Laboratory instruction,	170.00	
		$16,238.31

TABLE No. XI.

MISCELLANEOUS FUNDS.

Bussey Trust.

Receipts.

Net income from Real Estate,		$21,754.66

Payments.

Annuities,	$6,300.00	
Legal services,	28.50	
One-half of the remaining income to Bussey Institution,	7,713.08	
One-quarter " " " Divinity School,	3,856.54	
" " " " " Law School,	3,856.54	
		$21,754.66

Gray Fund for Engravings.

Receipts.

Interest on Fund,	$798.90	
From sale of catalogues,	19.00	
		$817.90

Payments.

To the Treasurer of the Museum of Fine Arts,		$814.37

TABLE XI, CONTINUED.

Annuity Funds.

Receipts.

Gore, interest,	$1,131.45	
Lucy Osgood, interest,	274.30	
Bemis, interest,	2,538.55	
		$3,944.30

Payments.

Gore, annuities,	$600.00	
Lucy Osgood, annuity,	420.00	
Bemis, annuity,	2,572.50	
		$3,592.50

Price Greenleaf Fund.

Receipts.

Income of special investment,	$28,963.92	
Interest,	31.25	
		$28,995.17

Payments.

Legal services and expenses,	$31.25	
Scholarships,	3,000.00	
Beneficiary money transferred to College account,	12,981.96	
Balance of income for Library expenses,	12,981.96	
		$28,995.17

Daniel Williams Fund.

Receipts.

Interest on Fund,		$797.70

Payments.

Treasurer of Herring Pond Indians,	$272.96	
" " Mashpee Indians,	545.93	
		$818.89

Sarah Winslow Fund.

Receipts.

Interest on Fund,		$240.55

Payments.

Minister at Tyngsborough, Mass.,	$119.72	
Teacher at " "	119.72	
Commission on income credited to University,	6.13	
		$245.57

Walter Hastings Building Fund.

Receipts.

Amount received from Trustees,	$200,000.00	
Interest,	1,383.32	
		$201,383.32

Payments.

Services of Architects, &c.,		$4,008.00

TABLE XI., CONTINUED.

Class Funds.

Receipts.

Class of 1834, income of special investment, ...	$18.33	
" " **1853**, " " " "	63.11	
		$81.44

Payments.

To Secretary of the **Class of 1834**, ...	$18.33	
" " " " " " **1853**, ...	63.11	
		$81.44

Sundry Accounts.

Receipts.

Gospel Church Fd. (accumulating). Interest on Fund,	$163.65	
Robert Troup Paine Fd. " From special investm't,	1,388.33	
Advances to School of Veterinary Medicine, from general investments, ...	1,576.12	
Price Greenleaf Fund, gain from change of special investment, ...	29.74	
		$3,157.84

Payments.

Annuity for **Class of 1802**, ...	$120.00	
Gurney Annuities, ...	573.29	
Advances to Observatory repaid, ...	1,059.51	
" " Dental School repaid, in part, ...	1,489.76	
		$3,242.56

GENERAL SUMMARY OF THE TABLES.

			Receipts.	Payments.
Table	I.	University, ...	$44,873.10	$47,871.14
Table	II.	College, ...	367,499.21	312,257.96
Table	III.	Library, ...	36,674.67	42,369.20
Table	IV.	Divinity School, ...	32,550.23	35,215.23
Table	V.	Law School, ...	45,152.60	36,639.61
Table	VI.	Medical School, ...	66,427.93	66,247.00
Table	VII.	Dental School, ...	7,763.27	6,273.51
Table	VIII.	Lawrence Scientific School and Museum of Comparative Zoölogy,	41,311.31	41,197.12
Table	IX.	Observatory, ...	39,851.65	35,040.01
Table	X.	Bussey Institution, ...	10,341.91	7,171.94
		James Arnold Fund, ...	7,684.55	7,300.82
		Arnold Arboretum, ...	7,995.89	7,515.18
		School of Veterinary Medicine, . .	14,662.19	16,238.81
Table	XI.	**Bussey** Trust, ...	21,754.66	21,754.66
		Gray Fund for Engravings, . . .	817.90	814.37
		Annuity Funds, ...	3,944.30	3,592.50
		Price Greenleaf Fund, ...	28,995.17	28,995.17
		Walter Hastings Building Fund,	201,383.32	4,008.00
		Class Funds, ...	81.44	81.44
		Daniel Williams Fund, ...	797.70	818.89
		Sarah Winslow Fund, ...	240.55	245.57
		Sundry Accounts, ...	3,157.84	3,242.56
			$983,961.39	$724,889.73
			724,889.73	
		Balance, ...	$259,071.66	

Which is the net increase of the Funds and balances, excluding gifts for capital account, as also shown on page 29.

Certificate of the Joint Committee of the Corporation and Overseers of Harvard College, for examining the Books and Accounts of the Treasurer entered in the Journal kept by him.

he undersigned, a joint committee of the Corporation and Overseers of Harvard College to examine the books and accounts of the Treasurer for the eleven months ending July 31, 1888, have, with the assistance of an expert chosen by them, examined and audited the Cash book from pages 370 to 399, inclusive, and have seen that all the bonds, notes, mortgages, certificates of stock, and other evidences of property, which were received by him and on hand at the beginning of said year, are now in his possession, or are fully accounted for by entries made therein; they have also noticed all payments, both of principal and interest, indorsed on any of said bonds or notes, and have seen that the amounts so indorsed have been duly credited to the College.

They have carefully examined all notes, bonds, mortgages, and other securities invested during the said year, and are of opinion that all such investments have been judiciously made and are amply secured.

They have in like manner satisfied themselves that all the entries for moneys expended by the Treasurer, or charged in his books to the College, are well vouched; such of them as are not supported by counter entries being proved by regular vouchers and receipts.

They have also seen that all the entries for said year are duly transferred to the Ledger, and that the accounts there are rightly cast, and the balances carried forward correctly to new accounts.

(Signed,)

MARTIN BRIMMER, FREDERICK L. AMES,	*Committee on the part of the Corporation.*
T. JEFFERSON COOLIDGE, ROGER WOLCOTT, CHARLES HENRY PARKER, GEORGE B. CHASE, ISRAEL M. SPELMAN,	*Committee on the part of the Board of Overseers.*

BOSTON, December 11, 1888.

ANNUAL REPORTS

OF THE

PRESIDENT AND TREASURER

OF

HARVARD COLLEGE.

1888-89.

CAMBRIDGE, MASS.
PUBLISHED BY THE UNIVERSITY.
1890.

ASTOR LIBRARY
FEB
20
1890
NEW YORK

624
CANCELLED

PRESIDENT'S REPORT FOR 1888-89.

To the Board of Overseers: —

The President of the University has the honor to submit the following Report for the academic year 1888–89; namely, from Sept. 27th, 1888, to Sept. 26th, 1889: —

Charlemagne Tower, of Philadelphia, who was elected a member of the Board of Overseers in 1885, died on July 24th, 1889, at the age of eighty. Mr. Tower's health had been delicate ever since his election, so that to his great regret he had never been able to attend a meeting of the Board.

Edward Brown Lefavour, Assistant in Physics, died on the 18th of May, 1889, after a brief illness. He was an accomplished mathematician and physicist, who had but recently entered the service of the University, although he took the degree of Bachelor of Arts in 1876.

Lists of the resignations and appointments of the year will be found in the Appendix (pp. 192–197).

The resignation of Mr. Francis Parkman, as a Fellow of the Corporation, was a serious loss to that Board. He had been a Fellow for fourteen years, discharging all the duties of the position with punctuality and zeal in spite of delicate health, and enjoying the intimate relations into which it brought him with many of the governors and teachers of the University. When the state of Mr. Parkman's health compelled him to resign, the Corporation accepted his resignation with reluctance, greatly regretting to lose the only member of the Board who possessed a wide reputation as a man of letters.

The resignation of Francis Bowen, Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity, does not appear in the list of resignations, because it was not acted upon by the Corporation until after the beginning of the current academic year; but it was received by the President on the last day of the year 1888–89, and it took effect immediately. Mr. Bowen had been forty years in the service, four years as

Tutor (1835–1839), and thirty-six years as Alford Professor (1853–1889). In the earlier part of his service as Alford Professor, he gave instruction in all the great subjects mentioned in the title of his chair; in the later years the Plummer Professor and the Professor of Political Economy had relieved him of large portions of the work assigned by its founder to the Alford Professorship. As teacher and author Professor Bowen was always learned, clear, positive, and incisive; as a member of the Faculty he was punctual in attendance, usually but not uniformly conservative in his action, and courteous though strenuous in debate. In recognition of his long, faithful, and distinguished services he has been elected, since the beginning of the current year, Alford Professor *Emeritus*.

In pursuance of the policy of making frequent changes in the Board of Preachers, Rev. Lyman Abbott, D.D., of Brooklyn, N. Y., was appointed to the Board in June last in place of Rev. Alexander McKenzie, D.D., who had served with great acceptance for three consecutive years. Dr. Abbott is the first person not a graduate of the University to be chosen a Preacher.

The General Court of the Commonwealth passed at the session of 1889 two Acts for the benefit of the University, one amending the Act of 1865 in regard to the election of Overseers, the other enlarging the power of the President and Fellows to hold taxable real estate. Neither Act encountered any opposition.

The amendment of the Act of 1865 (Appendix, p. 198) removes the one practical difficulty which experience has developed in the working of that admirable Act; it does away with the obligation to nominate, and vote for, particular persons for particular vacancies. Under the Act as now amended the five persons receiving the highest number of votes are elected for the longest term, and the person receiving the next highest number of votes is elected for the next longest term, and so forth.

Under the new Act to enlarge the power of the President and Fellows to hold real estate (Appendix, p. 198) the

University may take and hold, or may sell, any real estate, within or without the Commonwealth, which has been given to it for educational purposes; and may invest in, or sell, productive real estate within the Commonwealth to any amount, provided that nothing in the Act shall be construed to give the University "any claim to greater exemption from taxation than it now has under the constitution and laws of this Commonwealth." This Act enables the President and Fellows to accept taxable real estate without limit, wherever situated, and to invest in Massachusetts real estate as they may think judicious. The first object of the Corporation in seeking this highly beneficial legislation was to remove all doubt concerning the legality of their actual holdings of taxable real estate, and all possible hindrances to the acceptance of real estate which might hereafter be given or devised to them either in Massachusetts or elsewhere, so far as the legislation of the Commonwealth of Massachusetts could remove such hindrances. The powers of the Corporation to hold real estate were derived from the Charter of 1650, the Constitution of the Commonwealth (Chap. V., Sect. 1, Art. 2) and an Act passed in 1814 which enabled the Corporation to take and hold real estate to the annual value of $12,000 in addition to all which they were already authorized to hold (Appendix, p. 199). Just how much real estate was covered by these three authorizations it was next to impossible to determine, because of the multiplicity of the transactions and the remoteness of some of them, the great changes of annual value in some of the pieces of property, and the extreme difficulty of ascertaining in each case the annual value at the time of acquisition. The Corporation, however, believing that the Commonwealth would not object to enlarging their power to hold real estate, if the exemption question were expressly excluded, and desiring to have all doubts and apprehensions removed concerning their power to accept or buy, and to keep or sell, real estate, sought the comprehensive legislation which the Commonwealth has so liberally granted. The second object of the Corporation was to get liberty to diminish their holdings of personal property and increase their investments in real estate, if in their judgment the whole property of the University could be made more secure by such changes. Although they had no immediate purpose of exchanging their personal property, which under the general laws of the Commonwealth is exempt from taxation, for real estate which is not so exempt, they wished to be free to make such exchanges whenever required by the permanent interests of the University.

The report of the Dean of the College Faculty contains, as usual, the complete statistics of the admission examinations, (see pp. 43–52) with several tables in which the interesting effects on secondary schools of the new requirements announced in 1886, and exclusively used for the first time in 1888, can be clearly traced. A comparison of the figures for 1889 with those for 1888 reveals certain tendencies which bid fair to persist. The number of candidates, for example, who offer all the elementary studies, including Greek, Latin, French, and German, is increasing (31.43 % to 37.31 %), as is also the number of those who omit Greek altogether (3.5 % to 6.42 %). Again, there is an increase in the number of candidates who present advanced French, mathematics and experimental chemistry, the increase being chiefly at the expense of advanced Greek, and of Greek and Latin composition. Thirdly, elementary experimental physics has gained decidedly upon the alternative requirement of physics and astronomy from books alone, and the history of the United States and England has gained a little upon the alternative requirement of the history of Greece and Rome. These facts taken together show that the classical schools are giving more attention than formerly to modern languages and experimental science, and that schools of a new sort are preparing boys for Harvard College, — namely, schools which teach thoroughly Latin, mathematics, modern languages and experimental science, but do not teach Greek.

That the admission examination is still an effective barrier against incompetent students is proved by the large number of withdrawals and rejections (see pp. 43, 50). Out of 355 candidates in 1889, 28 withdrew of their own accord without completing the examinations, and 22 who completed the examinations were rejected. One in seven of the candidates failed of admission. The changes in the requirements announced in 1886 were not intended to lower in the slightest degree the standard of admission, and they have had no such effect.

There is a common impression among ill-informed people that Harvard College, although hard to get into, is easy to stay in. How erroneous this impression is may be seen every year in the figures published in the Dean's annual report concerning the changes in the *personnel* of the successive College classes. Thus in October, 1888, it appears from the Dean's statistics for the year 1888–89 (p. 39) that the Freshman, Sophomore, and Junior classes numbered together 825 persons, and that of this number 57 left College at or before the end of the year, and 42 were dropped to a lower class. In other words, it appears that one person in nine failed to maintain his place in the College. The majority of those who leave College altogether withdraw voluntarily; but they do so because they become satisfied after trial that they have not health or capacity enough to meet the demands of the College, or, if they are poor, that their chances of success in College work are too slight to warrant them in incurring debt. The Dean points out with satisfaction that while 42 students were dropped in 1888–89, 34 students who had been dropped in former years succeeded in making good the deficiencies which had caused them to be dropped. The success of College discipline is to be best judged, not by the number of the lost, but by the number of the redeemed.

The departments of German, French, and political economy were strengthened in the spring of 1888–89 by new appointments and promotions, these departments having been the weakest in the College as regards the ratio of the number of teachers and the amount of their salaries to the number of students.

Under pressure from the Board of Overseers, the College Faculty devoted the last half of the year to a revision of their regulations. They succeeded in devising important improvements in the following particulars: 1. In compelling the prompt and orderly resumption of work at the end of the long vacation and of the short recesses; 2. in securing the accurate and prompt return of absences; 3. in providing for quick action in cases of neglect of duty; 4. in promoting systematic work on the part of the students by making a reliance on spasmodic application dangerous; 5. in making more effective those penalties for neglect which stop short of dismissal; 6. in abolishing *extra* studies, that is, studies or courses in which a student could obtain credit for examinations passed, but in which no account was taken of his attendance on the regular instruction. These are all administrative details which are important to the orderly working of the College, but do not determine its general policy. They had been neglected too long by the Faculty, chiefly because the attention of that body had been given for years to more interesting and vital matters — such as the enlargement of the elective system, the selection and coördination of courses of instruction, the replacing of hostile by friendly relations with the students, the reformation of the religious services of the College, the construction of a judicious system of bodily training and athletic sports, the maintenance of an effective but unexaggerated system of examinations, the improvement of methods of instruction in all subjects, and the development of the general policy of giving students liberty with responsibility. These difficult and fundamental subjects had absorbed the attention of the Faculty as a body; but a different kind of problem, not less serious, had also been pressing upon every member of the board, old or young, experienced or unpractised. During recent years every College teacher has been forced to answer anew the personal questions — what can I best teach, and how shall I teach it? The younger men have been aided and guided somewhat by their elders in the same department; but every man has really been obliged to take up new subjects and to treat them in new methods. There is not a single member of the Faculty who is to-day teaching what he taught fifteen years ago as he then taught it. Without any guidance from precedents, and under many restrictions from lack of appliances and resources, each teacher has had to recast his own work, each department repeatedly to modify and extend its series of courses, and the Faculty as a whole to invent, readjust, and expand the comprehensive framework within which all these rapid changes and steady growth have taken place. It is no wonder, then, that the Faculty had allowed administrative methods, which were suitable enough for the College of 1868-69, to remain in use long after they had ceased to be adequate.

The improvements recommended by the Board of Overseers had all been proposed and discussed in the Faculty in former years, but with only a languid interest and without action. When, however, the Faculty were convinced by the action of the Overseers that administrative defects which really concerned only a small portion of the students, — and that the least interesting and promising portion, — might nevertheless seriously impair the reputation of the College and imperil the reforms with which it is identified in the public mind, they at once set to work to provide legislative remedies for these defects. The measures which they took are now on trial, and the indications are that the needed remedies have been found.

At the same time, not content with remedying evils, the Faculty introduced two positive improvements. The first of these improvements was the regulation concerning advisers for Freshmen (see p. 95). Encouraged by the favorable experience of a committee on special students which had been in existence for three years, the Faculty placed the Freshman class under the charge of a committee of thirteen members of the Faculty, each member of which should act as adviser to about twenty-five Freshmen (see p. 96). The relation was intended to be a confidential and friendly one; but as a starting-point every Freshman was required to submit his choice of studies to his adviser at or before the beginning of the year. Most of the instructors who were appointed on this committee found that they themselves had a good deal to learn about the selection of a four years' course of study in Harvard College, and all of them acquired a new respect for the discretion, foresight, and conscientiousness with which each Freshman dealt with his own private problem. The regulation applied only to the Freshman class, but might well have included all new-comers, whatever class they had entered. It was expected that if a profitable and pleasant relation were established during the Freshman year between the adviser and the advised, the relation would be maintained during the later College years; but the primary function of the adviser was to give counsel and encouragement to the newcomer, bewildered perhaps by the sudden freedom of College life, the multiplicity of fresh interests, and the complexity of his first problem — the wise selection of his studies.

The second improvement related to the conditions of the three distinctions which may accompany the degree of Bachelor of Arts (see pp. 98, 99).

The outcome of the whole discussion of the year concerning the College administration and discipline was reasonably satisfactory both to the Overseers and to the Faculty. Only on one point was there an ultimate difference between the two Boards. The Overseers recommended that a morning roll-call be established. The Faculty thought this measure inexpedient; and the Overseers did not insist upon it. On the other hand, the Faculty dealt successfully with several matters not touched by the Board of Overseers. The time required for the revision of the regulations prevented the Faculty from attending to the subject of shortening the College course; but whenever that grave problem is seriously attacked, it will be found that the revision of 1888–89 has facilitated in important respects its successful solution.

The means of prosecuting athletic sports and healthy exercises at the University were considerably increased in 1888–89. Two new ball-fields were provided to the eastward from Divinity Hall and the Divinity Library, the University contributing and grading part of the land, and the Norton estate leasing the remainder for five years. All charges for and upon the leased land, including taxes, are to be borne by the athletic organizations of the students.

Mr. George W. Weld, of the Class of 1860, purchased a convenient piece of marsh land on the river, lying on the highway now called Boylston Street, and adjoining a lot already owned by the University; on this land he has built a large and commodious boat-house, which he proposes to equip with boats, and endow with a fund sufficient to pay for a moderate amount of service. In this establishment it is Mr. Weld's purpose to provide boats of various kinds for hire at moderate rates, his object being to cultivate rowing, not by organized crews, but by individuals, or sets of friends, who like that form of exercise and recreation. The Corporation value highly this gift, which they believe will answer an excellent purpose.

The building for athletic purposes projected by Mr. Henry R. A. Carey, towards which he gave $25,000 to the Corporation in 1887–88, was further studied by the giver and the architects selected by him — Messrs. Longfellow, Alden & Harlow; the purposes were somewhat changed, and the plans much altered and enlarged. A site satisfactory to Mr. Carey was assigned to the building on the northern edge of Holmes Field. The bids for the contract revealing the fact that the enlarged structure would cost about $36,000, Mr. Carey increased his original gift to that amount. The building is roofed in, and will be ready for use in the coming spring.

While the facilities for gymnastic exercise and out-of-door sports, and the habitual enjoyment of these facilities, have greatly increased within the past ten years, the satisfaction which the governors and friends of the University have taken in the consequent improvement in the average physique of the students has been abated by the contemplation of the growing evils — both physical and moral — which beset the intercollegiate contests in base-ball and foot-ball. Against these evils it has been impossible to procure combined action by the several College Faculties; and the reformatory efforts made by Harvard College acting singly, whether by the Corporation, the Overseers, the Faculty, or by committees appointed by one or more of these bodies, have not reached the roots of the evils. In Cambridge itself, and for the sports and contests which go on among the students of the University by themselves, these efforts have been in many ways successful; but the evils of the intercollegiate contests have for the most part defied them.

The rules governing intercollegiate base-ball and foot-ball contests have been made by "leagues," small associations in which the competing colleges are represented each by a delegate or delegates. These leagues have shown themselves either unable or unwilling to make rules effective to prevent brutal and foul play, to exclude "professionals" and "professionalism," and to regulate fairly the composition * of the "teams." Experience has abundantly proved that nothing is to be hoped from these "leagues." They are worse than useless for purposes of reform, and they are the source of incessant misunderstandings, quarrels, and recriminations between the colleges represented. The very injurious antagonisms between American colleges used to be founded on theological differences, or on differences of policy in regard to studies or discipline. To these causes of discord and mutual distrust, between institutions which should invariably coöperate, are now added hot disputes over athletic contests — disputes in which charges of ungentlemanly and unsportsman-like behavior are bandied to and fro by the students on either side, and appeal is made to official certificates and sworn statements, all the discreditable proceedings being spread out, often in exaggerated and distorted forms, in the public press.

The fact that the boat-races have of late been the best-conducted of the intercollegiate contests has suggested that these contests should all be confined to two fairly-matched colleges, or at least to a moderate number of games arranged each year without the intervention of any standing "league" or association. This plan is probably worth trying; but it must be confessed that one, at least, of the evils connected with intercollegiate athletics is due not so much to the number of the competitions as to their intensity. This intensity leads to a preparation for them which becomes more and more elaborate, protracted, and repulsive. Thirty years ago it was nothing but a pleasure to train eight or nine weeks for a boat-race; now it costs nearly as many months of monotonous and stupid labor of the tread-mill sort. In consequence, many sensible, ambitious, and competent young men are prevented from taking part in these sports by the exaggerated requirements in preparation for them, and the semi-professional standard of excellence which intense competition has set up. There is demanded of the candidates for the crews and the nines an expenditure of time and

---

* The rules concerning the composition of teams are extraordinarily defective: Thus in 1888–89, under these rules, six of the members of the Harvard University Base-ball Nine were members of professional schools, and the majority of the so-called Freshman Foot-ball Eleven, at the most interesting game of the year, were not members of the College Freshman Class.

strength which is inconsistent alike with the legitimate enjoyments and with the appropriate labors of student life. To be sure, this evil does not affect any considerable proportion of the students. Thus in 1888–89 the total number of College students who were candidates for the University Crew and the University Nine — no man belonging to both — was 52, or only $4\frac{4}{10}$ per cent of the whole number of students. Thirty-two other students were candidates for the University Foot-ball Eleven; but the evil of prolonged preparation for matches is less serious in foot-ball than in the other sports, because the foot-ball season begins with the opening of the academic year and lasts only about nine weeks.

Ever since 1882 the President, the Director of the Hemenway Gymnasium, the Faculty, and the successive committees which have endeavored to regulate athletic sports, have been insisting that all College sports should be strictly amateur sports; but not till the current year has there been any indication that this fundamental principle has been thoroughly accepted by the undergraduates and graduates of Harvard or of any other College, so far as base-ball and foot-ball are concerned. In 1882, and again in 1883, Harvard College made a strenuous effort to get combined action by all the competing Colleges to exclude the professional element and to keep these sports and boating in a condition fit for students; but these efforts failed. Only last spring the Harvard Committee on the Regulation of Athletic Sports, after preceding committees had resisted like applications for six years, yielded to urgent petitions of the undergraduates, supported by a large number of graduates, that the Base-ball Nine be allowed to play with professional clubs. The fact is that in the United States there exists no well-informed and consolidated opinion about amateur sports. The public interest in athletic sports is of such recent origin that no inherited traditions exist, and most people have had no occasion to consider the difference between competitive sports pursued for exercise and pleasure, and the same sports pursued for making money.

What is desirable for the right conduct of College sports is that all practice should be at home and only with other organizations within the same College; that in each sport there should be one, two, or three intercollegiate contests, the interest of which should not be lessened by any inferior competitions either before or afterwards; that Freshman intercollegiate contests should be discontinued; that no student should be allowed to take part in intercollegiate contests for more than three years; that a proper system of accounting * for all receipts and expenditures should be established, and all unnecessary expenditure discountenanced; and that public betting at intercollegiate games should be forcibly suppressed, as it now is even at professional ball-games.

Before a fair share of success can be expected to reward the efforts of Harvard athletes in intercollegiate contests, three local reforms need to be accomplished: 1. The individual members of crews and ball-teams should be selected on better principles and with competent advice. 2. The diet, exercise, and general condition of men in training should be supervised by a discreet and interested physician. 3. A plan or policy for the steady development of each sport should be pursued year after year in a comprehensive and far-seeing way. The competition has become much too strenuous for the crude and shifting methods which have in all three respects prevailed at Harvard.

A new provision was made in 1888–89 for the poorer students at the University. The Corporation having occasion to buy the large house on the northeast corner of Oxford and Kirkland streets, granted the use of the whole lower story to a Club — called the Foxcroft Club from the name of an old Cambridge family whose estate included the house-lot — which was to maintain there reading-rooms, lockers, toilet-rooms, and a cheap restaurant. The plan has been successfully carried out. A student who can sleep at home need not hire a room in Cambridge; and any student who is forced to economize can procure at the Club a luncheon for ten cents, and a sufficiency of plain food for a day for thirty-five cents. Each article of food is sold by portions for cash at a slight advance over actual cost (see Appendix, p. 199). The articles of food are tolerably well selected; but stews and leguminous soups

---

* Since the beginning of the current year a step in the right direction has been taken at this University in regard to the system of accounting in all the principal sports.

are not in favor with the students, the admirable dietetic qualities of these articles being for the most part unknown in American households. A mixed committee of University officers and students regulates the affairs of the Club. An economical student need not now pay more than $300 a year (the long vacation excluded) for tuition, board, lodging, fire, and light, and of this sum the tuition fee makes one half. The cost of living in Cambridge is lower now than at any time since 1861.

The bequest of Increase Sumner Wheeler (A.B. 1826) was received in April last. It establishes a fund of $50,000, the income of which, or so much of it as the President and Fellows shall deem requisite, is to be applied "to the support of religious worship on Sundays and other days." In leaving money to the University primarily for religious uses, Mr. Wheeler, who was a Unitarian, imposed no conditions whatever on his gift, and used only the simplest and largest phrase — "the support of religious worship." The University possesses one other fund ($833.57) for the support of religious services; and this also was given by two Unitarians without restriction. As the cost of maintaining the services in Appleton Chapel — morning prayers and Sunday evening services in term-time during the whole year and Thursday vespers for four months in winter — was $7555.33 in 1888–89, the whole income of the Increase Sumner Wheeler Fund will be applied to this purpose until the further order of the President and Fellows. It may be mentioned incidentally that there is need of a new building of moderate size within the College Yard for the use of the University Preachers and the religious societies. Such a building ought to contain an auditorium for three or four hundred persons, another for one hundred, a reading-room, a music-room which the Chapel choir could use for rehearsals, and a large parlor, — the whole to be in charge of the Preachers to the University for the time being.

The number of students registered in the Graduate Department in 1888–89 was ninety-nine (p. 101), of whom fifty-one were new-comers, and forty-four were graduates of other institutions. The growth of the Department since its organization in 1872–73 has been tolerably steady, but slow; and its administrative machinery — as the Acting Secretary of the Academic Council points out in his report (p. 105) — has always been inadequate. All the instruction given in the Department has been given by members of the College Faculty, who have, of course, been in part withdrawn from ordinary College teaching in order to give advanced instruction suitable only for graduates and some exceptional undergraduates. At first, the College instructors looked with a certain distrust upon this process of withdrawing from College instruction in order to give Graduate instruction, or in other words of giving up large classes in comparatively elementary work to conduct small classes in advanced work; but gradually, as competent students appeared, and the ultimate success of the new Department was assured, instructor after instructor offered one or more courses which were only suited for advanced students, until now the great majority of the teachers in arts and sciences take part in the work of the Graduate Department. Meantime the number of fellowships has increased from two to twenty, worth from $450 to $750 a year; and in addition about thirty scholarships, worth from $150 to $350 a year, which were formerly used in the College, have become available in the Graduate Department. The competition for the fellowships is very keen; for the 11 travelling fellowships 33 persons applied, and for the 6 Morgan Fellowships, the incumbents of which must reside at the University, 41 persons applied. One of the most welcome gifts of the year 1888–89 was the gift of $30,000 by Mr. William Story Bullard of Boston to found "three fellowships of $10,000 each, in grateful and affectionate remembrance of three friends," — Henry Lee, Ozias Goodwin, and Henry Bromfield Rogers, — of whom the first two were honorable and successful merchants and the third a wise and liberal citizen of Boston.

The record of the 37 persons who have held Harvard Fellowships in Europe from 1873 to 1889, and have returned to the United States, is an interesting one, although the number of individuals is not large enough to establish any general conclusion. Three of the 37 have died, one shortly after his return from Europe, another as professor in this University, and the third as professor in another university. The remaining 34 are now distributed as follows: —

In the service of Harvard University :		
Professor,	1	
Assistant professors,	2	
Instructors,	6	9
In the service of other colleges and universities :		
Professors,	6	
In lower grades,	6	12
In the service of academies and schools,		4
In the U. S. Geological Survey,		1
Naturalists,		2
Chemist (manufacturing),		1
Preacher,		1
Orientalist,		1
Critic and author,		1
In no settled occupation as yet,		2
Total,		34

Of the 25 surviving persons who are not now in the service of this University, 12 have been in its employ for longer or shorter periods since their return from Europe. Out of the 37, 27 have become professional teachers of high grade; but of these teachers, 17 ultimately took service in other institutions. It is a fair question for discussion whether fellowships available in Europe or fellowships available only at the University are most useful. For the purpose of building up a graduate department in a given institution, fellowships available only at that institution are best; but for serving the common cause of education in the country at large there is much to be said for fellowships available in Europe. This University is glad to possess both kinds.

As the travelling fellowships have heretofore been administered, few persons except Harvard Bachelors of Arts have enjoyed them, and most of the incumbents have held them for three years by repeated annual appointment. It would perhaps be an improvement to use the travelling fellowships chiefly as prizes for graduate students who have already passed one or two years at the University, and to reduce the time during which they are commonly held to two years, or even to one year. Under such a system, these fellowships would oftener be held by graduates of other colleges than Harvard, and a much larger number of persons would enjoy for a time the great stimulus of study in Europe. Moreover, the incumbents would on the average be better prepared than they are now to profit by a residence abroad.

An agreeable incident of the year was the publication of a report on the moral tone, intellectual earnestness, and general advantages of Harvard University prepared by a committee of graduate and college students who had come hither from other colleges. There were in Harvard College and the Graduate Department 97 such students, who had come from no fewer than 64 different institutions; and of this number 75 answered the inquiries of the committee. The report contained a summary of the answers, and liberal extracts from the letters themselves, the general verdict being highly favorable, both absolutely, and by comparison with the other institutions with which the writers were familiar. The writers desired, not only to defend the University against unjust suspicions and accusations, but also to make known its advantages both for undergraduate and graduate students, many of them maintaining that these advantages are practically unknown to the young men of the country. There grew out of this undertaking an organization of students from other colleges, and the appointment by this organization of a committee to welcome and help, at the opening of each college year, students coming hither from other colleges, either as graduates or as undergraduates.

Within three years the Divinity School has more than doubled the number of its students. This increase may be accidental, or it may be a legitimate result of the enlargement of the Faculty and the improvement of the equipment of the School at all points, or lastly it may be caused indirectly by the increasing freedom with which churches employ ministers whose professional training has not been obtained exclusively under denominational control. It is not impossible that genuine University training for the profession of the minister is gaining favor. Graduates of other theological schools resort to the Divinity School in small but increasing numbers (1887–88, four; 1888–89, seven; 1889–90, ten) and the variety of theological schools thus represented is large (Meadville, Yale, Southern Baptist, Union of New York City, Western, Oberlin, Princeton, Tufts, Canton, and Boston).

The School is conducted, like the other departments of the University, on business, not eleemosynary, principles. Every student pays for his tuition, board, and lodging; but the tuition fee of the School is only $50 a year, instead of $150 as in the other Cambridge departments of the University. In the opinion of the President it is time that even this distinction should be abolished. The Protestant ministry will never be put, in his opinion, on a thoroughly respectable footing in modern society until the friar, or mendicant, element is completely eliminated from it. There are no good reasons why Protestant students of theology should be taught, fed, and lodged gratuitously; students of law, of medicine, or of the liberal arts are not. The Protestant minister is an organizer of charity, a promoter of friendly social relations, a family adviser and sympathizer, a public functionary for baptisms, marriages, and burials, a leader of social worship, and a public teacher who upholds the ideals of manners, conduct, and character. To treat him, young or old, as an object of charity is no more appropriate than to treat in that way the master of the high school, the family physician, or the judge of probate. The services of competent ministers are as well compensated in the modern world as those of competent teachers or physicians, and there are as many prizes for ministers as for men of other professions. In a village the minister has, to be sure, a small salary; but he has a larger cash income than any other person in the village, except perhaps the store-keeper. In large towns and cities the earnings of a competent minister are certainly equal to the average earnings of educated men in general. The young graduate of a theological school has no apprenticeship to serve, and no long years of waiting for remunerative employment. There are doubtless many incapable men in the ministry, who cannot earn a good living; but the same is true of all other professions, and there would certainly be fewer incompetent persons in the ministry to-day, if the gratuitous education for that profession, which has prevailed almost universally for generations past, had not encouraged weaklings of all sorts to enter it. To enable young men of narrow means to reach the learned professions — the ministry among others — at a reasonable age, scholarships and like aids are necessary; but these aids should be awarded competitively for merit and promise, as they now are in all departments of this University. Free tuition, like the free board and lodging with heat, light, and all necessary furniture which most theological schools offer their students, is not a legitimate aid for selected persons, but an indiscriminate charity. The low tuition-fee is the only remnant of indiscriminate charity in the Divinity School.

It is mentioned in the Dean's report (p. 111) that a good beginning has been made of a Semitic collection in which Babylonian and Palestinian antiquities and other objects of interest shall be brought together. The learning and zeal of Professors Toy and Lyon have awakened a keen interest at the University in Hebrew and Assyrian literature and history, so that a Museum to illustrate and reinforce their teaching would be a timely addition to the resources of the University.

The Law School had in 1888–89 a third year of decided prosperity. Its general condition seems healthy and stable; and since its income has for several years exceeded its outlay, the time is approaching when the teaching staff can be again enlarged, and the number of subjects taught in the School increased. There are inexplicable fluctuations in the number of Harvard Bachelors of Arts who enter the Law School year after year; the supply of graduates of other colleges is reasonably constant in sum total, but comes irregularly from a large number (125 between 1870–71 and 1887–88) of widely scattered institutions; the admission examinations are attempted only by a small number of persons of whom nearly one half are rejected (99 rejected out of 218 candidates in twelve years); and the supply of non-graduates, most of whom are special students, is variable (see p. 115). Nevertheless the number of students has steadily increased for seven years past, except that the whole number in 1888–89 was the same as in 1887–88.

The Dean presents in his report (p. 116) the results of an interesting investigation into the age of the Law students on entering the School. It appears that on the average of the past sixteen years (1873–74—1888–89) Harvard graduates have entered the School at 23.17 years, graduates of other colleges at 23.25 years, and non-graduates at 22.16 years. The entering age of the graduates of colleges has slightly increased on the average since 1873–74; but the average age, at the time they took the degree of Bachelor of Arts, of those Harvard men who have subsequently entered the Law School has increased much more within this period; for it appears (p. 118) that whereas 57% of all the Harvard Bachelors of Arts who entered the Law School in the first four years of the period entered in the same year in which they graduated at the College, in the next six years 59% entered in the year of their graduation from the College, and in the last six years 72%. An increasing proportion has been going directly from the College to the School, and yet there has been no reduction of the average age of Harvard graduates in arts on entering the School. The average College graduate is 26 years old when he takes his degree at the Law School, and then has before him an apprenticeship or clerkship of indeterminate length before he can begin practice for himself. Wherever the fault, and whatever the remedy, it is clear that the degree of Bachelor of Arts is taken in the United States later than in any other country in which the degree is used, and too late for the best interests of the individuals who aspire to it, and of the institutions which confer it.

The Dean calls attention (p. 123) to the fact that the remarkable prosperity of the School for the past four years began simultaneously with the establishment of the Harvard Law School Alumni Association; and he expresses his belief that the publication of the complete catalogue of the officers and students of the School, which was first issued in 1888, has been of great service by showing the School itself, as well as the public, how distinguished a body of men its old students have become, and how great an influence they have exerted.

Professor Langdell has now been Dean of the Law School for almost twenty years. It has been a period full of fundamental changes, serious risks, grave criticisms, and severe anxieties; but the changes have proved wise, the risks have been run without disaster, the criticisms have been met or outgrown, and the anxieties have been forgotten in the crowning success of the last four years. Let any who wish to understand the Dean's grounds of legitimate satisfaction compare the

School of 1868–69 with the School of 1888–89 as regards its regulations, courses of instruction, methods of teaching, requirements for admission and graduation, building, library, funds, and general administration.

The main improvements made in the Medical School in 1888–89 were the expansion and readjustment of the instruction offered to graduates in medicine during term-time, and the establishment of numerous short courses for practitioners and advanced students to be given in the summer vacation. The new instruction is chiefly clinical; but some short laboratory courses are also offered. Thirty-one courses were announced for last summer. The gentlemen who give the summer instruction receive no compensation except the moderate fees paid by the students in the several courses; they clearly teach for other motives than pecuniary ones.

Unintelligible variations occur from time to time in the number of Harvard Bachelors of Arts who from year to year enter the Medical School. The College class which graduated in June, 1889, has furnished but seven men to the Medical School.

	Number.	Number of Harvard A.Bs.	Number graduated in the corresponding year of the College.
Fourth-year Medical class of 1889–90	23	7	
Third-year " " " " "	77	19	234 (1887)
Second-year " " " " "	83	17	234 (1888)
First-year " " " " "	87	8	213 (1889)

The financial condition of the School is not a suitable one. Since medical education came to consist mainly of individual laboratory teaching and individual clinical training it has become the most costly branch of professional education. The amount of useful instruction which can be given by lectures to large classes is not large and tends to diminish; the cost of providing very numerous small groups of students with highly-skilled demonstrators, trainers, and critics is already heavy and tends to increase. The entire endowment of the School, apart from its buildings, being but $196,263.54, it is obliged to rely chiefly on its receipts from students ($58,141.48 in 1888–89), and its tuition-fee is therefore a high one — namely, $200 a year, beside laboratory fees and a graduation fee of $30. If the School possessed a considerable number of scholarships and other beneficiary aids, its high fee would be comparatively unimportant; but it owns only three scholarships (including the one founded in 1888–89 by Professor Cheever) and a half interest in one beneficiary fund worth about $80 a year. From these conditions several results follow: In the first place, the teachers who give substantially their whole time to the School are paid on a lower scale than in any other department of the University; secondly, an undesirable economy as regards apparatus, material, and service is perforce exercised in all departments of instruction and research; and thirdly, the School loses every year a considerable number of desirable students who are forced by poverty, against their will, to go to cheaper schools.

The School labors under some disadvantages because it has no official influence over the appointments in any hospital. It receives indispensable aid and furtherance from all the principal hospitals and infirmaries in and about Boston, and it has always been in especially intimate relations with the Massachusetts General Hospital. Nevertheless, there is not a single hospital, infirmary, or dispensary over the appointments in which it has the least control. Yet no clinical teacher in a medical school can do his work properly unless he has rightful access to a large hospital or dispensary. When, therefore, a vacancy occurs in some clinical department of teaching in the Medical School, the question before the Governing Boards of the University is — not who is the best man for the place in Boston or elsewhere — but who is the most available man as a teacher among the Boston practitioners already holding cognate hospital appointments given by other Boards of Trustees, who in making their selection had teaching not at all in mind. More than once this limitation of choice has proved unfortunate. More than once the School and the community have lost an important medical reinforcement because the School was not in position to offer to the desired person an adequate hospital appointment as well as a professorship. Moreover, it often happens that the terms of service of the hospital physicians and surgeons who are also teachers do not coincide with their terms of teaching, and that gentlemen who cease to be teachers do not simultaneously vacate their positions in the hospitals. At many important centres of medical education, both in the United States and in Europe, these and like difficulties have led to the establishment of very intimate connections between great medical schools and great hospitals; and it is much to be desired, in the interest of both school and hospital, that more intimate relations than those which now exist should in some way be established in Boston between these two kindred charities, each of which is indispensable to the other.

The Dental School celebrated last March by public addresses and a dinner the twentieth anniversary of the first Commencement of the School. The graduates of the School, through an efficient committee, suggested, planned, and carried out the simple commemoration, thus giving another proof of their interest and faith in the School. Their hearts were gladdened by an anonymous gift of $5000 to the endowment fund of the School, to which the giver has since added another $1000. This is the only large gift which the School has ever received, and for the first time in its history it has a favorable balance with the Treasurer of Harvard College, its fund being $8155.85 and its indebtedness to the general treasury $2216.40.

At the end of the year Dr. Charles Wilson and Dr. George F. Grant resigned their positions as Instructors and retired from the service of the School. Dr. Wilson had served as Demonstrator or Instructor for eighteen years, and Dr. Grant for fifteen years; both gentlemen had placed the School under lasting obligations.

The whole number of students, and the number competent to operate in the Infirmary, being larger in 1888–89 than usual, both the tuition fees and the Infirmary fees were much larger in amount than heretofore; so that the School had a surplus of $2895.27. The condition of the School gave some hope that the very low salaries of the professors could soon be raised.

Important changes were made in the Scientific School in 1888–89. Latin was dropped as a requirement for admission, and English and American history was substituted; so that the requirements are now English and American history, algebra, plane geometry, logarithms and plane trigonometry, physics, English, and French or German, the examinations in all these subjects being identical with those required for admission to Harvard College in the same subjects. It was hoped by this change to bring the School into better relations with High Schools which teach neither Greek nor Latin; and there are indications that this object has been partly accomplished.

The former four-years' course called Mathematics and Physics was converted into a course on Electrical Engineering. To supply for the students of this course needed instruction in handling tools and using machines, the President and Fellows made an arrangement for the year 1889–90 with the supervisory committee of the Cambridge Manual Training School, built and supported by Mr. Frederic H. Rindge, formerly of Cambridge but now of California. The instruction provided under this arrangement has proved highly satisfactory, and is believed to be a valuable element in the course of Electrical Engineering. The Dean points out (p. 137) that the Scientific School itself might reasonably aspire to the possession of a machine-shop well-equipped for instruction; but, at the same time he indicates still more serious needs — namely, a professorship of mechanical engineering and a professorship of architecture.

The former bifurcated four-years' course in Natural History was divided in 1888–89 into two distinct courses, one in Geology and the other in Biology, the division corresponding to the broad distinction between the profession of the geologist and that of the botanist or zoölogist.

It is encouraging to note that since the appointment of Professor Chaplin in 1885 to be Professor of Engineering and Dean, the Lawrence Scientific School has taken a new lease of life. The number of students has quadrupled, the courses of instruction have been readjusted and improved, and the general administration has been efficient and careful as regards the students, and suited to win confidence and coöperation from colleagues, parents, school-teachers, and all friends of the School and of the education which it offers.

The Bussey Institution may be said to have settled down to a well-defined mode of life. It supplies a small body of instruction given by one professor and three instructors; maintains four greenhouses which provide training in horticulture for its few students and also, of late, contribute material for the Cambridge classes in botany; and keeps its buildings insured and in repair, and its farm from deterioration. For the sake of the farm it takes horses and cattle to board, in order that the hay cut on the place may be consumed there. Living in this way, it has laid up $6433.53 in the past five years.

It is obvious from the class statistics given in the report of the Dean of the Veterinary Faculty (p. 138) that all the requirements of the School for admission and graduation are steadily insisted on, and that the intended high grade of the School is maintained.

The Veterinary Hospital was opened in August, 1883, and the School began operations a month later. Since that date the School and Hospital combined have become indebted to the University treasury to the amount of $17,137.19, of which about $13,000 represents the cost of a small building for school uses (adjoining the main Hospital) with the land on which it stands. On this debt interest is paid at the rate of 6%. The original Hospital building cost with the land $21,333.33; but it belongs to private owners, and taxes have to be paid on it as well as rent. Six years' experience has proved that the Hospital can maintain itself, if its operations are confined to paying patients; but that it cannot quite support the School also. From the beginning, salaries have been paid to all persons employed in either School or Hospital; but the scale of salaries has necessarily been a low one. All the veterinary practitioners now connected with the establishment, except the Dean, are themselves graduates of the School. As a business result, the Dean and the younger men who have coöperated with him in carrying on both School and Hospital have every reason to be satisfied with their achievement. They have created in six years a small School of high grade, and a Hospital which is self-supporting, and can almost support the School also. But the University cannot be content with the limitations which necessity has imposed on the work of both School and Hospital. The Hospital ought to offer gratuitous treatment for the suffering animals of poor owners, and the department should be an active centre of research. To enable the University to accomplish these very desirable objects, a considerable sum of money is needed — $38,570.52 to pay off the advances made by the University to the School and to buy the main Hospital building, and $50,000 more for a salary fund. The $38,570.52 would at once relieve the department of annual charges for interest, rent, and taxes amounting to $2576.13 ; and the salary fund would enable the Corporation to pay for the whole time of at least one of the teachers connected with the department. At present every one of the veterinary teachers except the resident surgeon is obliged to give part of his time to private practice.

From both a scientific and a humanitarian point of view the Veterinary department is one of the most interesting in the whole University; and its officers have shown themselves abundantly capable of administering with fidelity and good judgment any endowment which the benevolence of the community may commit to their charge.

The permanent funds, the income of which is appropriated to the purchase of books for the College Library, have been increased by only $10,000 since 1882–83; so that the accessions to that Library (Gore Hall) by purchase have of late been tolerably steady from year to year. The total annual increase of books in the whole University, by gift, exchange, and purchase, including the gains in laboratory and class-room libraries, has been on the average of the last five years 13,000 bound volumes a year. As the number of books and of readers increases, the administration and service of the Library cost more and more. The administration, service, heat, cleaning, repairs, binding, printing, and other current expenses in Gore Hall cost $30,429.70 in 1888–89, of which $22,089.73 was covered by the income of funds applicable to these charges and by a few fees and other receipts of small amount. There remained $8339.97, which was charged to the free income of the College. To relieve the College of this burden and enable it to apply this amount of free income from tuition-fees, as is most natural and desirable, to paying for instruction, there is needed for the Library a further endowment of $200,000, the income of which should be applicable to administration and service.

The Librarian (p. 150) describes with clearness and moderation the embarrassments which his department suffers on account of the lack of room in Gore Hall. There is not room enough to store the books in suitable classifications; there is neither space enough nor light enough for readers; and the catalogue-and-delivery room is entirely inadequate. The President can add nothing to the force of the Librarian's exposition. The need is a serious one; it exists at the very centre of the University considered as a place of study and research, and the very fact that it is so keenly felt signifies that the Library is fulfilling, though under difficulties, its all-important function; but, as was stated in the President's Report for 1887–88, it is a need which the President and Fellows are quite unable to satisfy with any resources now at their command. Indeed the President and Fellows foresee that if the reasonable needs of the Library should be met by the conversion of old Gore Hall into a fire-proof book-stack, and the erection of a spacious and well aired and lighted reading-room which could be kept open in the evening, the annual cost of carrying on the enlarged Library would be much increased. The reconstruction of the interior of old Gore Hall would probably cost about $60,000; and of this sum $10,000 could be withdrawn from the Gore Annuity Fund, which now amounts to $24,000 and is chargeable with only $600 in annuities. The remainder would probably have to be raised by a general subscription, since the reconstruction of an old building seldom seems to a single benefactor an attractive object. The new reading-room, on the other hand, is a very desirable object for individual munificence; for it would certainly be a very useful and welcome gift, and it might also be made an instructive example of wholesome and handsome architecture.

The small fund for the support of the Herbarium ($20,067.19) was reduced in 1888–89 by $1134.57, because the payments for salaries, service, repairs, and materials exceeded by that amount the income of the establishment. The income was $3361.66, two-thirds of which was derived from the copyrights which Professor Gray bequeathed to the Herbarium. The whole of the excess of the expenditure over the income was, however, less than the extra cost of revising during the year Dr. Gray's Manual of the Flora of the Northern United States (see p. 152), an important work, which has had a large sale for many years, and will certainly repay the cost of the thorough revision which it has received. Under an arrangement which Dr. Gray had entered upon before his death, Professor J. M. Coulter of Indiana contributed an important part of the work of revision.

It is of the utmost importance that the services of another systematic botanist should be immediately secured for the Herbarium, in order that the Curator, Dr. Sereno Watson, may be left free to devote himself to the completion of the Synoptical Flora of North America, left unfinished by Professor Gray. The Director of the Botanic Garden (p. 156) says that the adequate endowment of the Herbarium is now the most urgent need of the botanical department as a whole. To accomplish this object an additional fund of $40,000 would be sufficient, on the probable assumption that Dr. Gray's copyrights will hold about their present value for ten years to come. The fact that the Herbarium, which Asa Gray's scientific labors created, still depends for two thirds of its income on the product of the books which he wrote for popular use may well stimulate liberal lovers of botany and horticulture to contribute to the permanent endowment of his precious Herbarium and at the same time to the completion of his greatest scientific work.

The Director of the Botanic Garden reports (p. 154) that the endowment of the Garden has increased $60,000 in ten years and now amounts to $98,663.07; that $80,000 have been obtained for the erection of the botanical addition to the University Museum; and that $20,000 more have been contributed since 1879–80 for the construction of greenhouses, the equipment of laboratories, and the collection and care of specimens for the Museum. The new building, which makes part of the great University Museum on Oxford Street, will contain not only the botanical collections for public exhibition, but also a large lecture-room and spacious laboratories and store-rooms for the entire department.

The work of planting the permanent collection at the Arnold Arboretum has been suspended for two years because the Park Commissioners of the City of Boston have been unable to extend their roads through the Arboretum since the season of 1887. This autumn (1889) the Commissioners have resumed operations (p. 156), and it is hoped that the Director will be enabled during the coming season to make large additions to the permanent planted collection. It is one of the functions of the Arboretum to distribute plants, cuttings, and grafts to other botanical and horticultural establishments. The report of the Director gives evidence that this function is generously performed; for he mentions that in 1888–89 16,146 plants, cuttings, and grafts were distributed from the Arboretum, and that 2809 similar objects were received in return.

The investigations carried on in the Chemical Department during 1888–89 are fully set forth in the report of the Director of the Laboratory (p. 158). All three professors, one instructor, two assistants, and six advanced students took part in producing the published results. The Director points out with legitimate satisfaction that the collected papers published from the Laboratory during the two years, 1887–89, make a volume of more than four hundred pages. At the same time the number of students receiving laboratory instruction in Boylston Hall has increased.

Since the enlargement and rearrangement of Boylston Hall in 1871, twenty-two gentlemen, beside those now connected with the establishment, have served as assistants in the various laboratories. Two of this number have died; of the surviving twenty, nine are professors in other institutions, one is instructor in a technical school, two are teachers of science in important academies, three hold desirable positions in chemical industries, one is employed as a chemist in the U. S. Geological Survey, one is a physician, one holds a travelling fellowship, one carries on a private laboratory of research, and one is in an occupation not chemical. In other words, four fifths of the Boylston Hall assistants since 1871 have obtained desirable positions as teachers or chemists, one is a person of property who does not seek an appointment, one is still pursuing his studies, and only two are in occupations not chemical. Although the salaries of the assistants are low ($250 to $500 a year) the position of assistant is well worth having, for the experience gained is of great value, particularly for that large part of them who become professors in colleges or teachers in secondary schools.

The Director has the satisfaction of reporting (p. 163) that he obtained during last spring and summer subscriptions amounting to $34,500, Mr. Francis Bartlett of Boston giving $20,000, for the purpose of building a fire-proof museum and laboratories for mineralogy as part of the University Museum on Oxford Street. The building is already well advanced and the Director hopes to occupy it within the current year. The removal of the collections from Boylston Hall will make room for a large lecture-room on the second floor of that building, and for a new laboratory on the third — both of which are much-needed improvements.

Upon the resignation of Professor Lovering, as Hollis Professor and Director of the Jefferson Physical Laboratory, the Rumford Professor was made Director of the Laboratory. It had previously been the custom to regard the Hollis Professor and Director of the Laboratory as in charge of one collection of apparatus, and the Rumford Professor of another. When the Rumford Professor became Director, this division of the apparatus and of the appropriations came to an end, the entire apparatus of the establishment came into the sole charge of the Director, and the policy was adopted of permitting any instructor in the department to withdraw from the cabinets any movable piece of apparatus which is not in use.

In the preceding year (1887–88) all the courses in physics had been recast and rearranged, and it was hoped that the number of students pursuing the study of physics would increase in 1888–89. It did increase a little; but the large increase which was anticipated did not take place till the current year. The course of thirteen introductory lectures on physics to Freshmen was given in a new and interesting way by the three professors, Dr. Whiting, and Dr. Sheldon; and five illustrated lectures on different subjects in physics were given to the public and were largely attended. A summer course in laboratory physics, intended chiefly for teachers in secondary schools, was given for the first time in the summer of 1887.

Interesting investigations were carried on during the year (p. 169) by Professors Trowbridge and Peirce, Assistant Professor Hall, Dr. Robert W. Willson, Assistant Sheldon, Mr. Shea (the Tyndall Scholar), and Mr. Sabine, a graduate student. Several of these researches are still in progress; six papers were published during the year. The Director states forcibly the inevitable costliness of physical research (p. 172), and, while setting forth the many excellencies of the position, arrangement, and equipment of the Laboratory, urges the need of further endowment.

The Observatory had $43,594.59 to spend in 1888–89 and spent it, beside reducing the principal of the Boyden Fund by $11,089.42 (as is permitted by the terms of the will) and reducing the Observatory balance by $1837.11. No one who reads the report of the Director (p. 172) will doubt that the full equivalent of the money expended has been obtained. Two telescopes — a thirteen-inch and an eight-inch — were sent to Willows, California, in November 1888, where they were used in observing the total solar eclipse of January 1, 1889. Thence the larger telescope was carried to the summit of Wilson's Peak near Los Angeles, and the smaller to a station about 6000 feet high in Peru near Chosica. Since early May both telescopes have been assiduously employed in astrophotography. These distant expeditions to uninhabited places of difficult access are necessarily expensive; but the great interest of the results obtained justifies the unusual expenditure. Moreover, the work is just in the line of investigation which the Boyden Fund was intended to promote. A large amount of photometric work has also been done in Peru. The University is under obligations to the Government of Peru for permitting the free importation into that country of all the instruments and supplies belonging to the Harvard party of observers. The California station is certainly better than Cambridge for observing during the warmer half of the year. The necessary steps have been taken to secure an accurate comparison of the atmospheric conditions of the two places the year round. Meanwhile, the regular observing staff at Cambridge has been fully occupied, and the work of reduction and publication has been actively pressed forward.

The results of observation, wherever made, and whether on paper or on photographic plates, are all stored at the Observatory in Cambridge, there to be studied and discussed. To keep these precious papers and plates in a flimsy wooden building, heated by stoves and hot-air furnaces, is an unwarrantable risk; and the more these valuable materials accumulate, the more unreasonable seems their exposure to sudden destruction by fire or water. The urgent need of a plain fire-proof building to contain the unpublished records of observation, the library and the computing-rooms has been twice before pointed out in these reports; but thus far without effect. The risk cannot be covered by insurance, and the amount at risk is rapidly increasing in consequence of the present large expenditures on observations at three stations, two of which are remote and solitary. A low brick building which need not cost more than $10,000 would answer all purposes, until the great Bruce telescope begins to furnish plates, perhaps three years from now.

The proposed measures of coöperation with the U. S. Signal Service, the Blue Hill Observatory, and the New England Meteorological Society were all carried out in 1888–89.

Advances made by the Corporation within two years secured the completion of one section of the Oxford St. front of the University Museum, the subscription raised by Professor Goodale was sufficient for two thirds of the remainder of the front, and the subscription raised by Professor Cooke suffices for the rest. Accordingly, the whole Oxford St. front is now built as far as the southwestern corner-block, and it is probable that a large part of the new structure will be occupied within the current year. Thus about three quarters of the great quadrangle planned by Professor Agassiz in 1859, with what seemed to many a visionary enthusiasm, are already built. The floor area of the natural history portion of the Museum, not including the Peabody Museum of Archaeology, is four acres, and the distribution of this large area among the different departments and among the different uses, such as exhibition, storage, research and teaching, is indicated in the following table: —

DISTRIBUTION OF AREAS IN THE UNIVERSITY MUSEUM.

		Sq. ft.	Sq. ft.
Lecture-rooms, laboratories general and special, and professors' rooms,	Geology, including geography . . .	15,200	
	Zoölogy	10,284	
	Botany	18,816	
	Mineralogy . . .	7,200	51,500
Exhibition-rooms, open to the public,	Geology	7,200	
	Zoölogy*	29,740	
	Botany	6,292	
	Mineralogy . . .	6,200	49,432
Storage-rooms	Geology	9,600†	
	Zoölogy	19,000† 8,550	
	Botany	4,828	41,978
Library and reading-room			5,300
Photographic-room, coal and boiler-room, packing-room, and Curator's rooms			4,884
Hall and stairs (partly available for specimens)			21,220
Total square feet			174,314
or 4 acres and 74 square feet.			

It will be some years before all the exhibition rooms can be arranged; but within a few months the whole building, from the northeastern extremity to the southwestern corner-block, will be occupied approximately as indicated in the foregoing table and in the description given by the Curator in his annexed report (p. 182).

The various activities of the Museum were well maintained in 1888–89; but so long as a good part of the income of the Museum is necessarily devoted to repaying advances made for building, much interesting work upon the materials gathered in the Museum, which has been for years awaiting the experts who alone are competent to do it, must be further postponed.

---

* In the synoptic, special, and systematic zoölogical collections about half the space will be occupied by fossil types.

† These rooms are also work-rooms for specialists.

The Peabody Museum of American Archaeology and Ethnology (p. 186) could advantageously use at once $12,000 for cases, and as much more for the compensation of the additional assistants who would be required in order to arrange the collections in the new building with reasonable dispatch. Unless such help is given to the Museum it will be at least ten years before the additional rooms completed in 1889 can be all occupied and arranged. With the present income of the Museum, a moderate amount of exploring and collecting can be done each year, the materials collected can be well cared for, and a few hundred dollars can be spent in printing; but the treasures already accumulated cannot be put at the service of the public in suitable exhibition rooms or be made known to scholars through appropriate publications. The Curator states none too strongly (pp. 187, 188) the importance of training assistants in the methods of the Museum, in order to secure for the future an adequate number of experts for the service, not only of the Peabody Museum, but of other similar institutions. The Museum should be a school of American archaeologists and ethnologists.

The summer courses of instruction offered by the University in the long vacation have increased in number and importance of late years.

Year.	No. of courses offered.	No. of persons attending them.
1886	2	76, of whom 44 were teachers.
1887	4	150 " " 88 " "
1888	7	168 " " 102 " "
1889	8	188 " " 116 " "

The courses given at the Medical School in Boston in the summer of 1889 are not included in this table. A laboratory course in advanced physics will be given for the first time in 1890. The courses are not all given for the same motive. The primary object of the courses in chemistry, physics, botany, German, and French is to further good teaching of these subjects; the courses in geology and engineering utilize the best time of year for field-work in those subjects; and the course in physical training helps to give intelligent direction to the wide-spread interest in that subject, which has been recently awakened among teachers and other persons concerned with the education of the young. All the courses, moreover, serve the purposes of students who wish to advance themselves in their college studies by working during a part of the long vacation. In the summer of 1889 fifty-six students, connected with Harvard University or other institutions, attended the courses. The increasing use of summer courses suggests that American students may before long adopt the excellent English practice of making up reading parties under private instructors for the long vacation. In languages, literature, history, and the moral sciences, in which no laboratories are necessary, a reading party under competent leadership can do very good work at any quiet place near the mountains or the sea, if they provide themselves with a moderate number of books.

With the increase in the number of teachers at the University who are disposed to give a part of their time to original literary or scientific labors, and in the number of advanced students who are able with the help of their instructors to do creditable and useful pieces of literary or scientific work, it becomes clear that funds for printing and publishing in the name of the University valuable contributions to knowledge are to be a desirable form of University endowment. Such publications will naturally be various in form and quality; they may or may not be serial, and they may or may not be issued through an ordinary publishing house; they may be of such general interest as to command a sale, or they may be so technical as to be read by a few specialists only. The fact that the University has the means of publishing valuable papers by its officers and students, and securing for them a suitable distribution will stimulate the production of such papers. Such has been the effect in the two departments which already possess publication funds — namely, political science and classical philology. Many other departments desire the same facilities — notably, the departments of history, social ethics, Sanskrit, and Semitic literature. These funds need not be large. In any department a publication fund of $10,000 or $15,000 will answer an excellent purpose.

The attention of the Overseers is respectfully invited to the following reports on the several departments and scientific establishments.

CHARLES W. ELIOT,
President.

CAMBRIDGE, 16 January, 1890.

REPORTS OF DEPARTMENTS.

THE COLLEGE.

To the President of the University:

Sir, — I have the honor to submit the following report on the administration of the College for the academic year 1888–89.

The whole number of students in attendance at the beginning of the year was eleven hundred and eighty, distributed as follows: —

Seniors	210
Juniors	252
Sophomores	264
Freshmen	309
Whole number of undergraduates	1085
Special Students	145
Total	1180

Five Seniors were prevented from continuing their studies to the end of the year, two of them by reason of ill-health; and four failed in the examinations. Of these nine, three have joined the present Senior class. On the other hand three Special Students, former members of the class, who had failed to register as Seniors at the appointed time, were readmitted to the class later in the year. Accordingly two hundred and four Seniors, together with eight Juniors who had fulfilled all the requirements for graduation, and six members of previous classes, who had made up the deficiencies which had prevented them from graduating in regular course, were admitted to the degree on Commencement day. The degree was also conferred, on the recommendation of the Faculty, on six students of one or more years' standing in the Graduate Department.

The number of Seniors who have graduated in each of the last six years, with the number in each class who have failed to graduate owing to deficiencies of scholarship, are given in the following table: —

	1884.	1885.	1886.	1887.	1888.	1889.
Graduated	192	181	221	225	221	204
Failed	2	3	4	7	7	4

The aggregate losses and gains of the other three classes of last year, from October, 1888, to October, 1889, are shown in the following table: —

	October, 1888.		Loss.	Gain.	October, 1889.	
Class of 1890 . .	(Juniors)	252	31	58	(Seniors)	279
Class of 1891 . .	(Sophomores)	264	56	36	(Juniors)	244
Class of 1892 . .	(Freshmen)	309	66	39	(Sophomores)	282

These losses and gains of the several classes are of course not altogether losses or gains to the College, a considerable portion of them being due to the transfer of students from one class to another, as will appear from the next table, which gives the nature of the losses and gains in detail.

	Class of 1890.	Class of 1891.	Class of 1892.	Total for three Classes.
LOSSES.				
Left College without completing the year .	13	9	22	44
Left College after completing the year . .	6	4	3	13
Removed to a lower class	4	16	22	42
Advanced to a higher class	8	27	18	53
Became Special Student	. .	. .	1	1
Total loss	31	56	66	153
GAINS.				
From higher classes	3	4	16	.
From lower classes	28	17	. .	. .
Newly admitted	27	15	23	65
Total gain	58	36	39	133
Net loss	. .	20	27	20
" gain	27	. .	. .	. .

Among the forty-four students who left College without completing the work of the year are included five whose incomplete record was due to their failure to pass the examinations. Of the remaining thirty-nine, twelve were obliged by ill health to discontinue their studies. The probation of one Sophomore was closed for disorderly conduct, and three Freshmen were required to withdraw for persistent neglect of their studies. Six other Freshmen and one Junior were advised to withdraw. Three withdrew owing to lack of money, and three others to go into business. Ten withdrew for various other reasons of a personal nature.

Of the thirteen students who completed the work of the year, but have not returned to College, two withdrew without stating their reason. Three were prevented from returning by poor health, and one died near the end of the summer vacation. One was a former member of the class of 1889, who has so far made up his deficiencies that he can complete the requirements for the degree without further residence. Four other Juniors, who had accomplished almost a full year's work beyond the requirement, were granted the same privilege. Two of these transferred themselves to the Medical School. One Junior left College to study law, and one to go into business.

The forty-two students removed to lower classes, together with the five mentioned above, who would have been placed in lower classes had they returned to College, constitute the aggregate loss of the three classes due to failure in scholarship. To these are added in the following table, which gives also the corresponding figures for previous years, the ten (also mentioned above) who owed their dismissal to persistent neglect of their studies: —

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Removed to lower classes .	14	7	23	33	33	61	46	47
Withdrawn during the year	3	5	2	12	3	4	. .	10
Total	17	12	25	45	36	65	46	57
Whole number of students in the three classes . .	641	682	695	745	726	745	760	825

Of the fifty-three students advanced to higher classes, three were Juniors who had for special reasons been permitted by the Faculty to qualify themselves for the degree at the end of the Junior year. Eleven Sophomores and five Freshmen, who had been granted a similar privilege, have been advanced, in virtue of the work they have accomplished, to the Senior and Junior classes respectively, the Faculty having adopted the rule that in such cases the student shall be classed according to the number of courses that stand to his credit. The remaining thirty-four, — a gratifying increase over former years, — were former members of the classes to which they were advanced, having so far made good their deficiencies as to be entitled to this promotion under the rules. Five of them were Juniors who thus succeeded in graduating with their original class.

The sixty-five persons newly admitted to the three classes under consideration include twelve students who had previously been members of the College, and resumed their connection after an interval of absence. Five of these were readmitted in the course of the past year. Five candidates were admitted to the Sophomore class on passing the usual examinations. Eleven Special Students were admitted, — two to the Senior, three to the Junior, and six to the Sophomore class, — having given satisfactory proof of their qualifications chiefly by work done in College. Five other Special Students were admitted, — one to the Senior, one to the Junior, and three to the Sophomore class, — partly on the basis of work previously done at other colleges. Four students from other departments of the University, and twenty-eight graduates or students of other colleges or scientific schools, were admitted directly, — seventeen to the Senior, eight to the Junior, and seven to the Sophomore class.

The new Freshman class numbers three hundred and twenty-four, made up as follows: —

Admitted in 1889	
by examination	270
from other colleges	4
from the Lawrence Scientific School	1
Previously admitted	27
Removed from a higher class	22
Total	324

The number of Special Students in attendance at the beginning of the year, and the changes in their number down to October, 1889, are given in the following table: —

In attendance October, 1888		145
Registered later in the year		3
		148
Transferred to a College class during the year	4	
Withdrew without taking any final examination	27	
		31
Took final examinations in one or more studies		117
Left College before the end of the year	10	
Left College at the end of the year	34	
Admitted to a College class	15	
		59
Returned as Special Students, September, 1889		58
Readmitted		1
Newly admitted, September and October, 1889		84
Present number		143

Decrease, 2.

Combining and comparing the statistics which have been given, we obtain the following results: —

Number of students in attendance, October, 1889: —	
Seniors	279
Juniors	244
Sophomores	282
Freshmen	324
Whole number of undergraduates	1129
Special Students	143
Total	1272
Whole number of undergraduates, October, 1888	1035
" " " " 1889	1129
Increase	94
Whole number of students, October, 1888	1180
" " " " 1889	1272
Increase	92

The plan of the examinations for admission was modified by a vote of the Faculty, passed in the early part of last year, which transferred the three principal days of the September examination from Wednesday, Thursday, and Friday, to Monday, Tuesday, and Wednesday, of the week in which the college year opens. The object of this change was to secure, so far as possible, a punctual beginning of the work of the year on Thursday, and a considerable gain in this respect was effected at the opening of the present year. Not all the confusion, however, was eliminated, and the Faculty was satisfied that a still greater separation of the examinations from term-time was necessary, especially in view of the new requirement, to be noticed further on, that Freshmen must submit their choice of studies to their advisers before handing them in. It has, therefore, now been voted to set the three days of examination in question back to Thursday, Friday, and Saturday of the preceding week, leaving but one day's programme to be completed on Monday, so that two whole days will intervene between the end of the examinations and the first college exercises. This will afford the successful candidate ample time, after his admission, to make all necessary arrangements for beginning work with the rest of the students.

In connection with this subject the Faculty revised the rule relating to testimonials, and added a provision requiring every candidate, in addition to his certificate of good moral character, "to give the addresses of two persons, preferably former teachers or employers, from whom information about him can be obtained."

The question of granting a preliminary certificate to a candidate who passes on studies amounting to less than five hours (the present minimum) on the examination programme was considered by the Faculty at the instance of the teacher of one of the unsuccessful candidates of last year. The Committee on Admission issued a circular-letter to all teachers engaged to any considerable extent in fitting boys for Harvard College, asking them to express their views on the question. Replies were received from sixty, of whom less than a third favored the proposed change. A few thought the matter unimportant or had other plans to suggest, but a distinct majority preferred the present rule to any lower standard, though some of these suggested that exceptions might well be made in special cases. This suggestion was adopted by the Faculty, who voted to authorize the Dean, "in cases which seem to him deserving of exceptional treatment, to grant a certificate to a candidate who has creditably passed a preliminary examination in studies amounting to less than five hours."

In the subjects of the examination a change of some consequence was made, though not one that disturbs in the least the general plan, by the introduction of algebra as one of the advanced studies. For the present it is accepted as an alternative for mechanics, but the latter is to be removed from the list after the examinations of 1890, when the four advanced mathematical subjects will be logarithms and trigonometry, solid geometry, analytic geometry, and advanced algebra. Simultaneously with this action, a more particular definition of elementary algebra, naming all the topics embraced in the examination, was appended to the long-standing description, 'through quadratic equations.'

The whole number of candidates who offered themselves to be finally examined for admission this year was three hundred and fifty-five, or four more than in 1888. Of these, twenty-eight, who took a part of the examination in June with the intention of completing it in September, were so unsuccessful that they abandoned the attempt to pass this year; leaving the number of candidates who completed the examination three hundred and twenty-seven. The use made by these of the privilege of dividing the examination was as follows: —

Number of candidates who

Divided the examination between two years	225
“ “ “ “ June and September .	52
Took the whole examination at one time	50
Total	327

The statistics of the examinations which I now submit relate, in the first place, exclusively to these three hundred and twenty-seven candidates, without regard to the time when they were examined, and are designed to show the character of their preparation for college, — the studies they pursued in their preparatory course, and the quality of their work as tested by the examinations. Side by side with these statistics I have placed, for the purposes of comparison, the corresponding figures for 1888, the first year in which the examinations were conducted by the present method exclusively.

It will be remembered that of two of the elementary studies, German and French, the candidate may omit one, provided he present in place of it one advanced study in addition to the two required of all candidates; and also that he may omit elementary Greek or elementary Latin, provided he substitute for it two advanced courses (or their equivalent), one of which, however, must be in mathematics and the other in either mathematics or physical science. With the exception of this restriction on those who omit Greek or Latin, the candidate's choice of advanced studies is entirely free. The number of courses he must choose is: —

(*a*)	If he presents all the elementary studies, ...	2 courses.
(*b*)	" omits German or French, ...	3 "
(*c*)	" " Greek or Latin, ...	4 "
(*d*)	" " German or French and Greek or Latin,	5 "

The extent to which each of these four plans of preparation for College was used by the candidates of 1888 and 1889 respectively is shown in the following table: —

	1888.		1889.	
Number of candidates who presented themselves on —		Per cent.		Per cent.
Plan *a*	99	31.43	122	37.31
" *b*, omitting German	166		150	
" " " French	35		31	
" " " both	2		. .	
Total, plan *b*	203	64.44	181	55.35
" *c*, " Greek	11		21	
" " " Latin	0		0	
Total, plan *c*	11	3.50	21	6.42
" *d*, " Greek and German . .	2		2	
" " " " " French . . .	0		1	
" " " Latin " German . . .	0		0	
" " " " " French . . .	0		0	
Total, plan *d*	2	0.63	3	0.92
Whole number of candidates	315		327	

The following positive statistics, deduced from the above table, may be of interest: —

	1888.		1889.	
Number of candidates presenting —		Per cent.		Per cent.
Elementary Greek	302	95.87	303	92.66
" Latin	315	100.	327	100.
" Greek and Latin	302	95.87	303	92.66
" Greek without Latin . . .	0		0	
" Latin without Greek . . .	13	4.13	24	7.34
" German	145	46.03	175	53.52
" French	278	88.25	295	90.21
" German and French . . .	110	34.92	143	43.73
" German without French .	35	11.11	32	9.79
" French without German .	168	53.33	152	46.48

It will be remembered further that in two of the *elementary* studies the candidate has a choice of subjects: in History, between Greek and Roman history on the one hand, and the history of the United States and of England on the other; and in Physical Science, between a course in descriptive physics and astronomy and one in experimental physics. In both cases the first alternative is identical with the requirement in the same study under the old method, except that in Physical Science the old requirement has been increased by the addition of astronomy. In these two studies the candidates under consideration and the corresponding candidates in 1888, presented themselves for examination as follows: —

	1888.		1889.	
Students examined —		Per cent.		Per cent.
In the history of Greece and of Rome	281	89	285	87
" " " " the United States and of England .	31	10	42	13
" neither alternative	3		2	
			329	
" both alternatives	.		2	
	315		327	
" descriptive physics and astronomy	212	67	164	50
" experimental physics	93	30	149	46
" neither alternative	10		15	
			328	
" both alternatives	.		1	
	315		327	

In both studies there is a clear gain in favor of the new alternative, the increase in the proportion of those presenting themselves in experimental physics being particularly marked.

To show the extent to which the several *advanced* studies entered into the preparation of these candidates, I give first the number and the percentage of candidates presenting themselves in each study: —

	1888.		1889.	
		Per cent.		Per cent.
Whole number of candidates	315		327	
Number offering Greek	256	81	243	74
" " Latin	301	96	305	93
" " Greek Composition	198	63	188	57
" " Latin "	223	71	200	61
" " German	43	14	43	13
" " French	61	19	84	26
" " Logarithms and Trigonometry	48	15	54	17
" " Solid Geometry	53	17	61	19
" " Analytic Geometry	12	4	15	5
" " Mechanics or Advanced Algebra	11	4	10	3
" " Physics	9	3	1	0.3
" " Chemistry	22	7	27	8

The following tables are designed to show the various ways in which the advanced studies have been combined in the preparation of three hundred and seventeen of these candidates, — ten, whose list of advanced studies was incomplete, having been omitted from the account. Five of these ten, however, it should be remarked, presented the required number of advanced studies, and their deficiency was due to the fact that, through a misunderstanding of the rule, they offered an inadmissible substitute for elementary Greek. The figures which are repeated in each line of the table indicate the number of candidates who presented in combination the studies under which the figures are placed. Thus, under plan *a*, thirty-three candidates presented Greek and Latin, three presented Greek with Greek and Latin Composition, one presented Greek and Chemistry, &c. Full courses are distinguished by capital letters and figures in bold-face type.

PLAN *a*. 122 Candidates.	GREEK.	LATIN.	Greek Composition.	Latin Composition.	GERMAN.	FRENCH.	Trigonometry.	Solid Geometry.	Analytic Geometry.	Mechan. or Adv. Alg.	PHYSICS.	CHEMISTRY.
2 Courses.	33	33										
	3		3	3								
	1											1
		4	4	4								
		5			5							
		15				15						
		5					5	5				
		1										1
					3	3						
						5						5
							2	2				2
							1	1	1	1		
2½ Courses.	1	1		1								
		2		2	2							
		2		2			2	2				
3 Courses.	10	10	10	10								
	5	5				5						
	2	2					2	2				
		4	4	4		4						
		1				1	1	1				
		1				1						1
3½ Courses.	1	1		1								1
4 Courses.	3	3	3	3	3							
	1	1	1	1		1						
	1	1	1	1			1	1				
	1	1			1	1						
		2	2	2	2	2						
4½ Courses.	1	1	1	1		1	1					
	1	1	1	1		1		1				
	1	1	1		1	1						
	1	1		1	1		1	1				
5 Courses.	2	2	2	2	2	2						
6 Courses.	1	1	1	1	1	1	1	1				
Number of Candidates in each study	69	107	34	40	21	44	17	17	1	1	0	11

PLAN *b.* 179 Candidates.	GREEK.	LATIN.	Greek Composition.	Latin Composition.	GERMAN.	FRENCH.	Trigonometry.	Solid Geometry.	Analytic Geometry.	Mech'cs or Adv. Alg.	PHYSICS.	CHEMISTRY.
3 Courses.	126	126	126	126								
	1	1		1				1				
	5	5			5							
	7	7				7						
	4	4					4	4				
		2	2	2		2						
		1	1	1							1	
		2		2		2		2				
		1		1				1				1
		1					1	1				1
3½ Courses.	1	1	1	1			1					
	1	1	1	1				1				
	1	1	1		1							
	1	1		1		1						
4 Courses.	3	3	3	3	3							
	10	10	10	10		10						
	7	7	7	7			7	7				
	2	2				2	2	2				
4½ Courses.	2	2	2	2			2	2	2			
5 Courses.	1	1				1	1	1	1	1		
Number of Candidates in each study	172	179	154	158	9	25	18	22	3	1	1	2
PLAN *c.* 14 Candidates.												
4 Courses.		2			2		2	2				2
		3				3	3	3				3
					3	3	3	3	3	3		
					1	1	1	1				1
						3	3	3	3	3		3
5½ Courses.		1		1	1	1	1	1				1
		1		1	1		1	1	1	1		1
Number of Candidates in each study		7	0	2	8	11	14	14	7	7	0	11
PLAN *d.* 2 Candidates.												
5 Courses.		1		1	1		1	1	1			1
		1		1		1	1	1		1		1
Number of Candidates in each study		2	0	2	1	1	2	2	1	1	0	2

The following figures, deduced from the above tables, show to what extent the candidates admitted in 1888 and in 1889 had carried their studies beyond the point required for admission: —

	1888.	1889.
Candidates who presented advanced studies exceeding the required amount by one half-course	14	9
" one course	39	45
" one and a half courses	7	5
" two courses	14	9
" two and a half courses	..	4
" three courses	2	2
" three and a half courses	1	..
" four courses	3	1
Total	80	75
Percentage	24.3	22.9

The success with which this body of candidates sustained the test of the examinations is shown by the next two tables, of which the first gives the percentage of failure in each subject for the last two years: —

Percentage of candidates failing in each study: —	1888.	1889.
ELEMENTARY STUDIES.		
English	15	17
Greek	3	6
Latin	3	5
German	10	11
French	14	12
History (Greek and Roman)	5	7
" (American and English)	3	13
Algebra	22	28
Plane Geometry	21	18
Physical Science (Descriptive)	16	15
Physics (Experimental)	15	14
ADVANCED STUDIES.		
Greek	19	20
Latin	9	17
Greek Composition	16	12
Latin "	26	17
German	21	17
French	23	23
Logarithms and Trigonometry	71	32
Solid Geometry	19	23
Analytic Geometry	33	33
Mechanics and Adv. Algebra	73	64
Physics	22	100
Chemistry	5	0

The second table gives the general result of the examination, compared with those of previous years.

	1886.	1887.			1888.	1889.
		Old Method.	New Method.	Total.		
Candidates examined . . .	308	247	80	327	315	327
" admitted . . .	287	235	66	301	301	305
" " clear .	111	89	21	110	125	114
" rejected . . .	21	12	14	26	14	22
Per cent "	6.8	4.9	17.5	8.	4.4	7.

Of the three hundred and five candidates admitted this year, two hundred and seventy entered the Freshman class in September. Two, by passing further examinations, were admitted to the Sophomore class. Of the remaining thirty-three, fourteen, on account of their youth, or poor health, or lack of money, have postponed their entrance until another year; seven others gave notice that 'they did not propose to register this year'; two have gone abroad; three have entered the Lawrence Scientific School, and one the Medical School. The remaining six have not been heard from.

Besides the three hundred and twenty-seven candidates for admission, whose record is exhibited in the preceding statistics, three hundred and fifty-two persons, or one less than last year, were examined in various subjects as candidates for a preliminary certificate. Both of these classes of candidates are represented in the following table, which gives for each study the proportion of candidates examined, and the proportion of failure among those examined, in that study this year. With these are placed the corresponding statistics for the examinations of 1888. It is perhaps unnecessary to point out that the only correspondence to be looked for in the table is between the record of the preliminary examination of one year and the final of the next, and that this correspondence cannot, for obvious reasons, be exact.

Whole number of candidates: 1888, Preliminary . . . 353 1899, " . . . 352 1888, Final . . . . . 316 1889, " 327	Percentage of the whole number of candidates who were examined in each study.				Percentage of failure among those examined in each study.			
	1888.		1889.		1888.		1889.	
	Prelim.	Final.	Prelim.	Final.	Prelim.	Final.	Prelim.	Final.
ELEMENTARY STUDIES.								
English	6	72	0.3	98	50	20	0	17
Greek	80	40	78	39	24	7	28	14
Latin	96	36	95	37	23	8	20	14
German	25	36	29	37	27	12	15	16
French	72	43	68	48	31	29	20	22
History (Greek and Roman)	75	38	76	34	12	13	24	17
" (Am. and English)	11	6	11	8	32½	6	15	22
Algebra	88	51	86	57	47	43	42	48
Plane Geometry	51	79	51	79	41	27	18	16
Physical Sci. (Descriptive) .	27	53	15	35	39	20	29	19
" " (Experimental)	14	20	29	35	8	27	13	18
ADVANCED STUDIES.								
Greek	5	79	6	73	58	20	43	20
Latin	16	90	15	83	24	9	52	19
Greek Composition	19	52	16	46	36	19	22	15
Latin Composition	11	64	12.5	59	50	28	48	19
German	3	12	5	11	33	24	19	19
French	7	16	9	22	25	28	29	26
Logarithms and Trigonom.	1	15	4	17	67	71	71	33
Solid Geometry	3	15	7	17	50	21	52	23
Analytic Geometry	0.3	3	0.3	4	0	40	100	36
Mechanics and Adv. Algebra	0	3	1	3	. .	73	33	64
Physics	0	3	. .	0.3	. .	22	. .	100
Chemistry	3	7	3	6	0	5	0	0

The next table shows the general results of the preliminary examinations under the present system in 1887, 1888, and 1889, and those under the old method in the two preceding years. Under the new method a candidate, in order to secure a certificate, must ordinarily pass on studies occupying at least five hours on the examination programme, but for special reasons a certificate may be granted for a smaller number, as has been explained above. The time assigned on the programme to the several studies is as follows: English, an hour and a half (but the fraction is neglected in the table); elementary Greek and Latin, and advanced Greek, Latin, German, French, Physics, and Chemistry, two hours each; all other studies, one hour each.

Number of candidates who passed in studies amounting to	Old Method.		New Method.		
	1885.	1886.	1887.	1888.	1889.
Four hours	. .	. .	. .	. .	4
Five "	24	36	23	34	49
Six "	35	37	32	53	63
Seven "	51	55	45	68	54
Eight "	77	84	54	60	79
Nine "	24	46	16	24	16
Ten "	29	32	11	12	11
Eleven "	5	7	7	1	5
Twelve "	2	2	3	2	3
Thirteen "	1	1	0	2	1
Fourteen "	. .	. .	1	. .	. .
Received certificates	248	283	192*	256	285
Failed to obtain a certificate . . .	55	43	53	97	67
Whole number of candidates . . .	303	326	245*	353	352

The usual good order of the College was maintained throughout the year, and the Faculty was called upon to deal with serious breaches of discipline only in the cases of two Sophomores, one of whom was suspended three months for intoxication, and the probation of the other was closed for disorderly conduct. The subject of good order in private houses largely occupied by students was, however, brought to the attention of the Faculty, and a resolution was passed that a proctor should be placed in any building occupied by College students whenever in the opinion of the Chairman of the Parietal Board it may appear necessary; and that failure to receive a proctor under such circumstances should lead to the enforcement, without further action of the Faculty, of that section of the Regulations which forbids any undergraduate to lodge in any house or board in any family which has been disapproved by the Faculty. An agreement, moreover, was obtained by negotiation with the owners or agents of all private buildings occupied by eight or more students, that the following clause should be inserted in any future leases issued by them: "If the lessee shall be expelled or dismissed from Harvard College, or shall be required to sever his connection with Harvard University, or if the

---

* In 1887 seventy-six candidates were examined by the old method, of whom fifty-nine received certificates crediting them with subjects on the new list corresponding to those on which they had passed. The whole number of candidates in 1887 was therefore 321, and the number of those who received certificates was 251.

President of Harvard University shall request that the lessee shall not be allowed to remain in the premises, it shall be lawful for the lessor to enter and expel the lessee from the premises."

The instruction given in the College in the year 1888–89 is set forth in detail in the tables on the following pages, which contain a statement of the work done in each course, the names of the instructors, the number of hours a week of instruction, and the number of students of various classes and departments,* as well as the total number of students, in regular attendance. To furnish a complete view of the scheme of instruction, all the courses are included in the list, — those omitted for the year as well as those actually given. Of the omitted courses, those which were not offered are distinguished by a bracket ([ ) ; the rest were withdrawn when it appeared that they had not been taken by a sufficient number of competent students. A star (*) indicates that a course could be taken only with the previous consent of the instructor.

In addition to these courses, which may be counted towards the degree of Bachelor of Arts, instruction in Elocution was given to voluntary classes by Mr. Hayes.

The number of Evening Readings has gradually fallen off in recent years, as the number of public lectures and addresses has increased, and the few that were given last year are included with the latter in the following list: —

Babylonian Books, by Professor Lyon, five illustrated lectures as follows:

1. Their Discovery by Botta, Layard, and other Explorers.
2. Their Decipherment by Grotefend and Rawlinson.
3. Their Language and Script.
4. General View of their Contents.
5. Exhibition of a Collection presented to the University by Mr. Stephen Salisbury.

Moslem Civilization, by Professor Toy, four lectures (three illustrated) as follows:

1. Mohammed and the Koran.
2. Mohammedan Doctors and Saints.
3. Arabic Literature.
4. The Present Outlook in the Moslem World.

The Koran (two readings), by Professor Toy.

---

* To designate the various kinds of students in the several courses, the following abbreviations are used: Gr. for Graduate Student, Se. for Senior, Ju. for Junior, So. for Sophomore, Fr. for Freshman, Sp., for Special Student, Sc. for Scientific Student, Di. for Divinity Student, Law for Law Student, Me. for Medical Student, Ve. for Student in Veterinary Medicine, and Bu. for Student of the Bussey Institution.

COURSES OF INSTRUCTION, 1888–89.

Instructors.	COURSES.	Hours per week.	Students.	Total number of students.
	SEMITIC LANGUAGES.			
Prof. Lyon	1. Hebrew. — Harper's Elements of Hebrew. — Harper's Hebrew Method and Manual. — Reading of Selections from the Pentateuch, Historical Books, and Psalms (Gen. I.-VIII., XXXVII.; Judges I.-IV., VI.-XII.; Psalms 1, 14, 19, 23, 24, 25, 29, 43, 51, 53)	3	4 Se., 3 Ju., 1 So., 3 Di.	11
Prof. Toy	2. Hebrew (Second Course). — Syntax. — Interpretation of the whole of Deuteronomy, parts of Kings, Jeremiah, Proverbs, Psalms, and the whole of Ecclesiastes. Each member of the class read additional matter privately. — Gesenius's Grammar (Syntax). — Discussion of critical and exegetical questions in connection with the selections read	2	3 Di.	3
Prof. Lyon	3. Classical Aramaic	2 1st half-year	Omitted in 1888–89.	
Prof. Lyon	10. Jewish Aramaic	2 2d half-year	Omitted in 1888–89.	
Prof. Lyon	4. Assyrian. — Lyon's Assyrian Manual. — Delitzsch's Assyrische Lesestücke (pages 101-122, except no. 8 on pages 117, 118) with other selections, including the inscription on the Shalmaneser obelisk, which was copied and read from a cast of the original	2	1 Se.	1
Prof. Lyon	5. Assyrian (Second Course). — The Cuneiform Inscriptions of Western Asia (the cylinder inscription of Sargon, Sennacherib's Judean campaign, Assurbanipal's Egyptian and second Elamitic campaigns). — S. A. Smith's Keilschrifttexte Asurbanipals (K. 2674, K. 2652, K. 11, K. 549, K. 183, K. 487, K. 525, K. 578, K. 646, K. 550)	2	2 Gr.	2

Prof. Lyon	11. Assyrian (Third Course)	1	Omitted in 1888–89.	
Prof. Toy	7. Arabic. — Lansing's Arabic Grammar. — Selections from the Bible. — The Thousand and One Nights (one tale)	2	1 Gr., 1 Se., 1 So.	3
Prof. Toy	8. Arabic (Second Course)	2	Omitted in 1888–89.	
Prof. Toy.	9. Ethiopic	1	Omitted in 1888–89.	
Prof. Toy.	12. General Semitic Grammar	1	Omitted in 1888–89.	
	INDO-IRANIAN LANGUAGES.			
Mr. Nicolson	1. Sanskrit. — Perry's Primer (twenty-five Lessons). — Whitney's Grammar. — Lanman's Reader (68 pages, including selections from the Mahābhārata, Hitopadeça, Kathā-sarit-sāgara, and Mānava-dharmaçāstra). — Pañcatantra (Book I.). — Reading at sight of extracts	3	3 Se., 1 Fr.	4
Prof. Lanman	[2. Sanskrit Drama	3	Omitted in 1888–89.	
Prof. Lanman	[3. Sanskrit Epos	3	Omitted in 1888–89.	
Prof. Lanman	[4. Old Iranian. — Reading of the Avesta	3	Omitted in 1888–89.	
Prof. Lanman	[5. Pali. — The Sacred Books of Buddhism	3	Omitted in 1888–89.	
	GREEK.			
Dr. Wheeler	*A.* Herodotus (the selections in Goodwin's Reader). — Homer (Iliad, Books I.-IV.). — Reading at sight (selections from Xenophon's Hellenica, Herodotus, and the Iliad)	3	2 Ju., 1 So., 15 Fr., 8 Sp.	26
Profs. Allen and Wright and Drs. Morgan and Wheeler	*B.* Lysias (selected orations). — Plato (Apology and Crito). — Homer (Odyssey, Books VII.-XII.). — Euripides (Medea). — Reading at sight	3	2 Se., 1 Ju., 7 So., 76 Fr., 2 Sp. (Four sections)	88
Prof. Wright and Dr. Morgan	*C.* Lysias (selected orations). — Plato (Apology and Crito). — Homer (Odyssey, Books I.-VI.). — Aristophanes (Clouds). — Reading at sight	3	1 Ju., 3 So., 39 Fr. (Two sections)	43

COURSES OF INSTRUCTION. — CONTINUED.

Drs. Morgan and Wheeler	*E.* Greek Prose Composition (First Course). — Practice (once a week) in translation into Greek. — Goodwin's Moods and Tenses (once a fortnight). The class was divided into two sections, one of twenty-six students who had passed in Greek Composition for admission, and one of fifteen students who had not passed in that subject	3 a fortnight	4 Ju., 3 So., 33 Fr., 1 Sp.	41
Dr. Morgan	1. Andocides (three orations). — Demosthenes (three Philippics). — Lyric Poets (selections from Bergk's Anthologia). — Euripides (Alcestis and Bacchae). — Practice, oral and written, in reading at sight. — Lectures on the lives and works of the authors read, and on the Eleusinian Mysteries, with illustrations in Greek art	3	1 Ju., 9 So.	10
Prof. J. W. White	2. Sophocles (Antigone). — Aristophanes (Acharnians and Peace). — Thucydides (selections from Books VI. and VII.). — Written translations. — Reading at sight	3	4 Ju., 38 So., 1 Fr.	43
Prof. Wright	3. Greek Composition (Second Course). — Exercises from Sidgwick's Greek Prose Composition, Part III. — Oral *ex tempore* translation from and into Greek. — Original composition	1	1 Se., 3 Ju., 21 So.	25
Mr. C. P. Parker	5. Herodotus (Books I., II.). — Xenophon (Oeconomicus)	3	1 Se., 2 Ju., 4 So.	7
Prof. Wright	6. *First half-year:* Demosthenes (on the Crown, with parts of the Embassy, and of Aeschines against Ctesiphon). — Lycurgus (against Leocrates). — Lectures on life, times, and art of Demosthenes, and on Greek oratory and oratorical studies *Second half-year:* Aeschylus (Seven against Thebes). — Sophocles (Antigone). — Aristophanes (Frogs; private reading of one additional play). — Lectures on literary questions. — Studies on the Antigone of Sophocles (scholia, manuscripts, special topics — grammatical, metrical, literary, historical, biographical, archaeological — with written English versions) by members of the course	3	1 Se., 13 Ju.	14

Prof. Wright	7. *Greek Prose Composition (Third Course).* — Written composition in the style of Demosthenes and Plato, with studies of classical models. — Translation of selections of standard English (rhetorical and philosophical). — Original *ex tempore* composition on themes suggested by previous reading	1	5 Se., 1 Ju.	6
Prof. J. W. White	4. The Plays of Aristophanes, with lectures on the scenic and private antiquities. — Original investigation, discussions, and theses	3	7 Gr., 4 Se., 8 Ju., 1 So.	20
Prof. Goodwin	8. Plato (Republic). — Aristotle (Ethics, Books I.–IV. and X.)	3	2 Gr., 9 Se.	11
Prof. Goodwin	9. Aeschylus (Agamemnon and Eumenides) — Pindar (selections from the Olympian and Pythian Odes). — Aristotle (Poetics)	3	2 Se., 1 Ju.	3
Prof. J. W. White	[10. The Life of the ancient Athenians, described and illustrated from the monuments	2 or 3	Omitted in 1888–89.	
Prof. Wright	[12. Three Centuries of Greek History (600–300 B.C.). — Studies in institutions and in biography	3	Omitted in 1888–89.	
Prof. Wright	*16. Introduction to Greek Epigraphy. — Lectures on Inscriptions from the point of view of Archaeology and History, with detailed study of many examples, in fac-similes, casts, and squeezes (Roberts, Roehl, Dittenberger, Hicks, Löwy, C. I. A., etc.). — Practical exercises: special studies and interpretation, by members of the course	2 or 3 2d half-year	4 Gr., 2 Se.	6
Prof. Allen	[11. History of Greek Literature	3	Omitted in 1888–89.	
Prof. Goodwin	*13. Aristotle (Politics)	2 2d half-year	3 Gr.	3
Prof. Goodwin	*14. Thucydides (selections from the speeches and the more difficult parts of the narrative)	2 2d half-year	Omitted in 1888–89.	
Prof. Goodwin	[*15. The Political and Legal Antiquities of Athens, illustrated by the Legal Orations of Demosthenes and other Attic Orators	2	Omitted in 1888–89.	
Prof. Goodwin	*17. Syntax of the Greek Moods and Tenses	2 1st half-year	3 Gr., 2 Se.	

COURSES OF INSTRUCTION. — CONTINUED.

LATIN.

Dr. Wheeler	*A.* Cicero (six orations). — Sallust (Catiline). — Virgil (Aeneid, Books VII. and VIII.). — Reading at sight	3	1 Se., 1 Ju., 1 So., 6 Fr., 10 Sp.	19
Profs. Preble and Allen	*B.* Cicero (pro Murena and part of de Inventione). — Livy (Books XXI. and part of XXII.). — Terence (Adelphoe and Andria). — Reading at sight	3	1 Se., 2 Ju., 2 So., 52 Fr., 6 Sp. (Two sections)	63
Profs. Greenough and Smith	*C.* Livy (Book VII. and part of VIII.) — Cicero (oration for Sestius; half of de Amicitia). — Terence (Adelphoe; Heautontimorumenos). — Reading at sight	3	4 So., 99 Fr., 4 Sp. (Four sections)	107
Prof. Allen	*D.* (*Advanced Course for Freshmen.*) Livy (Book XXI.). — Cicero (de Senectute). — Terence (Andria). — Plautus (Menaechmi). — Reading at sight. — Instruction in orthography and word-formation. — Six lectures on Roman literature	3	2 So., 29 Fr.	31
Mr. C. P. Parker	*E.* Latin Composition. — *Section* 1 (for those who had not passed in Latin Composition for admission): Practice in writing Latin, based on Nepos (lives of Miltiades, Themistocles, Alcibiades, Epaminondas, and Hannibal). — Lectures, and composition both in and out of class. Attention to grammar rather than style	1	1 Se., 3 Ju., 3 So., 8 Fr., 1 Sp.	16
	Section 2 (for those who had passed in Latin Composition for admission), subdivided into three, and during part of the year four, sections: The writing, criticism, and discussion of passages of historical narrative. Much attention was devoted to style, and a larger vocabulary was required than in the lower section	1	1 Ju., 5 So., 24 Fr.	30
Prof. Lane	1. Pliny (Letters). — Tacitus (Histories and the Dialogus). — Horace (Odes)	3	1 Gr., 2 Se., 3 Ju., 39 So., 1 Sp.	46

Mr. C. P. Parker	2. Pliny (selected letters). — Cicero (selections from the Tusculan Disputations). — Horace (Odes, Books I.–III., with selections from Book IV. and from the Epodes). — Reading at sight. — Lectures and discussions	3	4 Ju., 30 So., 2 Fr., 2 Sp.	38
	The same for half the year	3	3 So.	3
Mr. C. P. Parker	3. Latin Composition (Second Course)	1	2 Ju., 21 So.	23
Prof. Greenough	4. The Satires and most of the Epistles of Horace	3 2d half-year	2 Gr., 1 Se., 13 Ju., 7 So.	23
Prof. Smith	6. Tacitus (Annals, Books I.–VI.). — Juvenal (Satires 1, 3–5, 7, 8, 10, 13). — Martial (120 Epigrams). — Reading at sight. — Capes's Early Roman Empire	3	1 Se., 17 Ju.	18
Profs. Preble and Allen	7. Practice in Latin expression and style. — Study of selections from classical prose as models. — Translation into Latin prose. — Verse composition	2	3 Se., 1 So.	4
	The same for half the year	2	2 Se., 1 Ju.	3
Prof. Lane	8. Plautus (Amphitruo, Captivi, Miles Gloriosus, Rudens, Trinummus). — Lucretius (Books I.–III., with selections from IV.–VI). — Cicero (de Natura Deorum)	3	1 Gr., 4 Se., 1 Ju.	6
	[13. History of Latin literature	2 or 3	Omitted in 1888–89.	
Prof. Preble	14. Studies in Latin literature — Catullus	1 till Christmas	2 Gr., 1 Se.	3
Prof. Greenough	*10. Private Life of the Romans. — Special topics in Roman private antiquities, chosen and worked up by the Instructor and the students	2	2 Gr.	2
Prof. Allen	*11. The Roman Drama. — History, structure, and versification. — Study of a play of Plautus and some of the fragmentary remains	3 1st half-year	3 Gr.	3
Prof. Lane	12. Quintilian (Book I.). — Gellius (extracts). — Inscriptions. — Investigation and discussion of special topics	1	1 Gr., 2 Se.	3

COURSES OF INSTRUCTION. — CONTINUED.

	GREEK AND LATIN.			
Prof. Greenough	[*1. Greek and Latin Comparative Philology	3	Omitted in 1888–89.	
	*2. Practice in text-criticism and interpretation of Greek and Latin authors:			
Prof. Allen	*First half-year:* Euripides (Alcestis, vss. 1–400)	3	3 Gr.	3
Prof. Smith	*Second half-year:* Horace (Epodes 1–7, 9, 17)	3	4 Gr.	4
	ENGLISH.			
Profs. A. S. Hill and Briggs and Mr. Baker	*A.* (Prescribed for Freshmen.) Rhetoric and English Composition. — A. S. Hill's Rhetoric. — Lectures on Rhetoric (twice a week, first half year, and once a week, second half-year). — Lectures on British Novelists from Richardson to Scott (once a week, second half-year). — Compositions, written in the class-room (weekly, throughout the year). — During a part of the year summaries of the Instructor's lectures were written by the students and submitted to the Instructor	3	2 Ju., 3 So., 275 Fr. 67 Sp., 7 Sc.	354
Profs. Briggs and Wendell and Messrs. Clymer, Kittredge, and Thayer	*B.* (Prescribed for Sophomores.) Twelve Themes. — Lectures on different kinds of writing — description, narrative, criticism, exposition, etc. — Discussion of themes. — The themes were returned to the students, with written criticism; they were then corrected by the writers (in most cases entirely rewritten) and given again to the Instructors		4 Se., 22 Ju., 236 So., 19 Fr., 18 Sp., 2 Sc.	301
Prof. Royce and Messrs. Conant and Baker	*C.* (Prescribed for Juniors.) Forensics. — Ten lectures on Argumentative Composition. — A Forensic, a Thesis (in forensic form), and an examination to test the student's power of writing argumentative essays off-hand on subjects previously studied		3 Se., 227 Ju., 13 So., 1 Sp.	244

Prof. Royce and Messrs. Conant Baker	*D.* (Prescribed for Seniors.) Forensics (Second Course, conducted on the same plan as Course *C*)		1 Gr., 173 Se., 14 Ju., 1 Sp.	189
	Theses substituted for Course *C* by candidates for Honors		1 Se., 19 Ju., 1 Sp.	21
	" " " " *D* " " " "		36 Se.	36
Prof. Wendell	12. English Composition. — Daily themes (one page) from Oct. 1 to May 29. — Sixteen fortnightly themes (five or six pages). — On Mondays, during the first half-year, lectures on the principles of Rhetoric; during the second half-year, discussion of daily themes. On Wednesdays, personal conference with sections of the class, each student thus meeting the Instructor four times in the year. On alternate Fridays, criticism by the class of fortnightly themes, each student who handed in a theme receiving one for criticism in writing on the spot; on the remaining Fridays reading and discussion of fortnightly themes before the class	3	32 Se., 52 Ju., 1 So., 6 Sp.	91
Prof. A. S. Hill	*5. English Composition (Advanced Course)	3	6 Gr., 11 Se., 1 Sp.	18
Profs. Taussig and Hart and Mr. Hayes	*6. Oral Discussion of Topics in Political Economy and History. — Preparation of a written brief, and discussion as a principal disputant, by each student four times a year, speaking from the floor. — Criticism by the Instructors on matter, arrangement, manner of presentation, and delivery	2	1 Gr., 22 Se.	23
Prof. Child	[3. English. — Sweet's Anglo-Saxon Reader. — Anglo-Saxon Poetry	3	Omitted in 1888–89.	
Prof. Child	4. Early English. — Mätzner's Altenglische Sprachproben (all the important part of the Poetry, and the most important part of the Prose, with numerous grammatical and metrical investigations)	3	5 Gr., 1 Se.	6
Prof. Child	[1. English Literature. — Chaucer	3	Omitted in 1888–89.	
Prof. Child	[11. English Literature. — Bacon. — Milton	3	Omitted in 1888–89.	
	13. English Literature:			
Prof. Child	*First half-year:* The English Bible	3	4 Gr., 8 Se., 8 Ju., 8 So., 1 Fr., 3 Sp.	32
Mr. Kittredge	*Second half-year:* Spenser	3	3 Gr., 6 Se., 8 Ju., 8 So., 3 Sp.	28

COURSES OF INSTRUCTION. — CONTINUED.

Mr. Kittredge	2. English Literature. — Shakspere (reading and interpretation of King Lear, King Henry IV. (both parts), All's Well that Ends Well, Macbeth, Julius Caesar, The Tempest)	3	4 Gr., 22 Se., 14 Ju., 17 So., 3 Sp.	60
Prof. Wendell	14. English Literature. — The Drama (exclusive of Shakspere) from the Miracle Plays to the Closing of the Theatres. — Lectures on the origin and development of the English drama and on the following dramatists: Greene, Peele, Marlowe, Ben Jonson, Chapman, Dekker, Thomas Heywood, Middleton, Beaumont and Fletcher, Webster, Ford, Massinger, and Shirley. — The class were required to read two or three plays a week, and to hand in weekly notes of this reading	1	2 Gr., 10 Se., 1 Ju., 1 So., 1 Sp.	15
Prof. Briggs	*15. English Literature (exclusive of Milton) from Shakspere to Dryden. — Lectures on Donne, Hall, Marston, Ben Jonson, Drummond, William Browne, Carew, Herrick, Suckling, Lovelace, George Herbert, Crashaw, Vaughan, Cowley, Waller, Butler, Izaak Walton, Sir Thomas Browne, Fuller, Jeremy Taylor, and Bunyan). — Notes from the students on the reading done in preparation for each lecture	2 2d half-year	7 Se., 10 Ju., 8 So., 1 Fr., 6 Sp.	32
Prof. A. S. Hill	7. English Literature of the Eighteenth Century. — Swift, Addison, Steele, Defoe, Pope, Johnson, Burke, Goldsmith, Gray, Cowper, Burns, Fielding, Sterne, and other authors of the century	2 1st half-year	3 Gr., 9 Se., 21 Ju., 12 So., 4 Fr., 5 Sp., 1 Sc.	55
Prof. A. S. Hill	[8. English Literature. — Poets of the Nineteenth Century	2 1st half-year	Omitted in 1888–89.	
Mr. Clymer	9. English Literature. — Prose writers of the Nineteenth Century. — Lectures on De Quincey, Lamb, Hazlitt, Hunt, Landor, Macaulay, Carlyle, Newman, Arnold, and other essayists; and on Jane Austen, Scott, Peacock, Bulwer, Dickens, Thackeray, Trollope, Kingsley, the Brontës, George Eliot, and other novelists. — Weekly notes of reading by the students	1	3 Gr., 16 Se., 19 Ju., 18 So., 3 Fr., 6 Sp.	65

Mr. Hayes	*10. Elocution	3 2d half-year	25 Sc., 19 Ju.	44
Prof. A. S. Hill	*20. English Literature. — Study of Special Topics. — The topic selected was: The Indebtedness of Coleridge to Schlegel, Schelling, and other German authors; the results were embodied in a thesis		1 Gr.	1

GERMAN.

Prof. Bartlett and Messrs. Grandgent and Babbitt	*A*. Elementary Course (prescribed for Freshmen who did not present German for admission). — Sheldon's Grammar. — Paul Heyse (La Rabbiata; Das Mädchen von Treppi). — Leander (Träumereien). — Paul (Er muss Tanzen). — Rosen (Ein Knopf). — Hauff (Der Zwerg Nase). — Chamisso (Peter Schlemihl). — Weil (translation of Ali Baba). — Other stories and plays	3	4 Se., 5 Ju., 6 So., 70 Fr., 26 Sp., 6 Sc., 1 Di., 1 Law (Five sections)	119
Mr. Babbitt	1*a*. Modern Stories, Plays, and Lyrics. — Franzos (Die Juden von Barnow). — Heine (Reisebilder, and other prose works). — Gützkow (Zopf und Schwert). — Stein's German Exercises. — Buchheim's Deutsche Lyrik. — Weekly exercises in original composition (biographies, abstracts, etc.) — After the spring recess the course was conducted in German	3	1 Se., 8 Ju., 61 So., 40 Fr., 6 Sp., 5 Sc. (Three sections)	121
Prof. Bartlett	1*b*. German Prose. — Becker (Friedrich der Grosse). — Kähler (Die drei Schwestern). — Von Sybel (Kleine Historische Schriften). — Der Neue Plutarch (Vol. 7). — Kleinschmidt (Napoleon I.). — Reading at sight. — Composition	3	1 Se., 3 Ju., 16 So., 12 Fr., 4 Sp., 1 Sc.	37
Prof. Francke	2. German Literature of the Nineteenth Century. — Grillparzer (Medea; Des Meeres und der Liebe Wellen). — Uhland (Gedichte; Balladen; Herzog Ernst). — Rückert (Nal und Damajanti). — Heine (Buch der Lieder; Nordseebilder; Deutschland ein Wintermärchen; Ueber Deutschland). — Weekly written exercises	3	7 Se., 18 Ju., 23 So., 18 Fr., 4 Sp.	70

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Bartlett	3. German Literature of the Eighteenth Century (First Course: Lessing and Schiller). — Lives of Lessing and Schiller. — Julian Schmidt's "Lessing." — Lessing (Minna von Barnhelm; Emilia Galotti). — Schiller (Ballads; Das Lied von der Glocke; Wilhelm Tell; Maria Stuart; Die Jungfrau von Orleans; Wallenstein). — Practice in writing German	3	1 Gr., 2 Se., 23 Ju., 3 So., 4 Fr., 5 Sp.	38
Prof. Francke	4. History of German Literature and Art from the Reformation to the middle of the Nineteenth Century. — Lectures. — Each student prepared two dissertations	2	2 Gr., 3 Se., 2 Ju., 3 So.	10
Prof. Francke	5. German Literature of the Eighteenth Century (Second Course: Goethe). — A study of the work and life of Goethe. — Each student presented five theses of a critical character	3	2 Gr., 8 Se., 9 Jr., 8 So., 2 Fr., 1 Sp.	30
Prof. Francke	[*6. History of German Literature and Art in the Middle Ages	2	Omitted in 1888–89.	
	[7. Das Nibelungenlied. — Die Minnesinger	1 or 2	Omitted in 1888–89.	
Prof. Bartlett	*9. Practice in writing and speaking German. — Subjects in History and Literature. — Becker (Friedrich der Grosse). — Von Sybel (Kleine Historische Schriften). — Kluge (Auswahl deutscher Gedichte). — Theses	2	1 Gr., 2 Se., 5 Ju., 4 So., 3 Fr., 1 Sp.	16
Prof. Francke	*20. Special Advanced Study and Research in the History of German Literature. The two topics investigated were: — 1. The development of national sentiment in Germany during the Middle Ages 2. The influence of Rousseau on German Literature		1 Gr., 1 Se.	2

	Here for convenience is placed			
Prof. Sheldon	[8. Gothic. — Braune's Grammar. — Heyne (Ulfilas). — Bernhardt (Vulfila). — Lectures introductory to Germanic Philology. — Thesis by each graduate student	1 or 2	4 Gr., 1 Se.	5
	FRENCH.			
Mr. Sumichrast	*A*. Elementary Course (prescribed for Freshmen who did not present French for admission). — Chardenal's First French Course in full; Second Course, about two thirds. — Elementary Syntax. — Translation at sight of French into English, and of English into French. — Study of the Irregular Verbs. — Bôcher's Reader. — Halévy (l'Abbé Constantin). — Erckmann-Chatrian (Madame Thérèse). — George Sand (la Mare au Diable). — Labiche (la Poudre aux yeux)	3	1 Gr., 4 Ju., 1 So., 37 Fr., 26 Sp., 2 Sc. (Two sections)	71
Messrs. Sanderson, Sumichrast, and Danion	1. Modern prose literature and drama. — Dumas (la Tulipe Noire). — Peyrebrune (les Frères Colombe). — Énault (le Chien du Capitaine). — About (les Mariages de Paris). — George Sand (Marianne). — Sandeau (Mademoiselle de la Seiglière). — Augier et Sandeau (le Gendre de M. Poirier). — La Fontaine (eight fables committed to memory). — Roulier's second book of French Composition, with dictées. — Once a week the five sections met together and easy readings and lectures in French were given on the following subjects: Racine's Britannicus, Corneille's Le Cid, Molière's l'Avare, V. Hugo's Hernani. In one of the sections the instruction was given entirely in French. Each student in the course, besides the above work, read privately a book selected with the approval of the Instructor, and presented a criticism or résumé of it in French	3	6 Se., 6 Ju., 36 So., 104 Fr., 15 Sp., 1 Sc. (Five sections)	168

COURSES OF INSTRUCTION. — CONTINUED.

Mr. Sanderson	2. Taine (La Fontaine et ses fables). — Balzac (Eugénie Grandet). — Ponsard (l'Honneur et l'Argent). — Lamartine (Jeanne d'Arc). — Bernardin (Morceaux choisis des classiques français du XVIII^e siècle). — Beaumarchais (le Barbier de Séville). — Corneille (Cinna). — Racine (Bérénice). — Molière (le Bourgeois Gentilhomme). — La Fontaine (Fables). — French Memoirs in Masson's French Classics (Vol. VII.). — Sainte-Beuve (Causeries, ed. Saintsbury). — The students were required to read privately a short history of France in French, to write in French summaries, résumés of plays, fables, or works read in the class, and to commit to memory eight of La Fontaine's fables. The course was conducted entirely in French	3	2 Se., 10 Ju., 24 So., 20 Fr., 4 Sp.	60
Mr. Sumichrast	3. Lectures on the History of French Literature from its origin to the present day. — Weekly dictations on the same subject. — Particular study and analysis of Corneille's Le Cid, Horace, Cinna, Polyeucte; Racine's Britannicus, Esther, Athalie; Molière's Misanthrope; Bossuet's Oraison Funèbre d'Henriette d'Angleterre; Voltaire's Siècle de Louis XIV.; Montesquieu's Grandeur et Décadence des Romains; J. J. Rousseau, Morceaux choisis (par S. N. Bernardin); Victor Hugo's Quatre-vingt-treize, Hernani, and selections of poems; Lamartine and Musset, selections of poems; Châteaubriand's Le Dernier des Abencérages; Thierry's Récits des Temps Mérovingiens; George Sand's Le Marquis de Villemer; Pailleron's Le Monde où l'on s'amuse. — Frequent themes on subjects connected with the course. — Memorizing of passages from Corneille, Racine, Molière, Lamartine	3	10 Se., 11 Ju., 16 So., 1 Fr.	38
Prof. Cohn	4. Littérature française au XIX^e siècle	3	8 Gr., 12 Se., 16 Ju., 7 So., 9 Fr., 1 Sp.	48
Prof. Bôcher	[5. Littérature française au XV^e et au XVI^e siècles	2	Omitted in 1888–89.	

Prof. Cohn	6. Littérature française jusqu'à l'avènement des Valois	2	2 Gr., 4 Se., 2 Ju., 4 So., 1 Sp.	13
Prof. Cohn	8. Translation and reading at sight. — Historical Prose. — Modern Novels and Plays	2	1 Se., 12 Ju., 16 So., 3 Fr., 3 Sp.	35
Mr. Sumichrast	9. Practice in writing and speaking French (Elementary Course). — Worman and Rougemont's Grammaire française. — Blouët's Class-Book of French Composition. — Rougemont's La France. — Conversation on grammar in connection with composition, and on the history and condition of France. — Discussion of questions, participated in by whole class	2	2 Se., 5 Ju., 11 So., 19 Fr., 8 Sp. (Two sections)	45
Mr. Sanderson	10. Practice in writing and speaking French (Intermediate Course).—Written exercises, consisting of compositions, letters, dictées, and grammatical exercises taken from Humbert's Exercises sur la Grammaire française de Chassang (cours moyen). — In the first half-year the conversation was based upon Ducoudray's leçons moyennes d'histoire de France; and during the second half the students chose themselves a subject for debate in French, such as the abolition of capital punishment, the right of women to suffrage, the character of Napoleon I., etc.	2	1 Gr., 6 Se., 6 Ju., 16 So., 5 Fr., 2 Sp.	36
Prof. Cohn	11. Practice in writing and speaking French (Advanced Course)	2	2 Gr., 5 Se., 6 Ju., 3 So., 2 Fr.	18

ITALIAN.

Mr. Grandgent	1. Grammar and Prose Composition. — Colombi (two stories from Dopo il caffè). — Farina (Il signor Io; Il fante di picche). — Silvio Pellico (selections from Le mie prigioni). — Gherardi del Testa (Una nuova linea di strada ferrata; La pagheremo in due; Pilade e Oreste). About half of the above was read at sight	3	5 Se., 9 Ju., 17 So., 8 Fr., 3 Sp.	42

Prof. Sheldon	[3. Old French		Omitted in 1888–89.	
Mr. Grandgent	4. Lectures on Provençal Literature and Versification, and on the Vulgar Latin of Southern Gaul, and its development into Provençal. — Reading of selected texts from Bartsch's Chrestomathie Provençale	2 2d half-year	1 Gr., 1 Sp.	2
Mr. Grandgent	5. Lectures on the history of the language of Italy, from the earliest times down to the present day; on the Vulgar Latin, and on the phonetic laws governing the development of Vulgar Latin into modern Italian. — Reading of the Appendix Probi and of Italian letters of the 13th century	2 1st half-year	1 Gr.	1
Prof. Sheldon	6. Old French Dialects, with special reference to Anglo Norman. — Selections from Bartsch and Horning (Langue et Littérature françaises). — Paris (Les plus anciens monuments de la langue française). — Foerster and Koschwitz (Altfranzösisches Uebungsbuch). — Tobler (Li dis dou vrai aniel.) — Foerster (Richars li biaus). — Garnier de Pont-Sainte-Maxence (selections). — Suchier (Reimpredigt, and Vie de St. Auban. — Mall (Li Cumpoz Philipe de Thaün). — Koch (Chardry's Josaphaz, Set Dormanz und Petit Plet (selections)	2	1 Gr.	1
Prof. Sheldon	7. The French Element in English. — Lectures on the introduction of French words into English, and the history of French sounds in English	1	2 Gr.	2
Prof. Sheldon	[8. Low Latin	1	Omitted in 1888–89.	
Prof. Sheldon and Mr. Grandgent	*20. Special Advanced Study and Research. — Determination by actual measurement of the positions of the vocal organs during the emission of the various vowels; the results embodied in diagrams of the student's own tongue-positions. — Studies in Italian morphology. — Theses, (1) on *sh* in English words of French origin; (2) on the development of the Italian conjugations	1	2 Gr.	2

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Sheldon	2. Modern Drama and Essays. — Gherardi del Testa (six plays). — Tasso (Gerusalemme Liberata). — Ariosto (about half of the Orlando Furioso). — Practice in writing Italian	3	1 Gr., 3 Se., 4 Ju.	8
Prof. Nash	*3. Selections from Boccaccio, Petrarca, Dante. — Nannucci's Manuale Letteratura del Primo Secolo. — Outline of the History of Italian Literature. — Composition	3	Omitted in 1888–89.	
	SPANISH.			
Prof. Nash	1. Del Mar's Grammar (taught by practical exercises). — Gil Blas (about 25 pages). — Eco de Madrid (about one third). — Exercises, oral and written, in prose composition, once a week throughout the year. — Conversation. — Particular attention to pronunciation	3	9 Se., 13 Ju., 13 So., 3 Fr., 2 Sp.	40
Prof. Nash	2. Modern Literature. — Moratín (El sí de las niñas; El café). — Nombela (La Riqueza del Pobre). — Alarcon (El Capitan Veneno; El Final de Norma; Historia de mis libros). — Biographical and critical Essays. — Lectures on literary topics. — Reading at sight. — Review of Syntax. — Exercises, oral and written, in prose composition, once a week. — Conversation. — Careful attention to pronunciation	3	5 Se., 3 Ju.	8
Prof. Nash	*3. Selections from Calderon, Lope de Vega, and Cervantes. — Early Spanish (the Poem of the Cid). — Outline of the History of Spanish Literature. — Composition	3	Omitted in 1888–89.	
	ROMANCE PHILOLOGY.			
Prof. Sheldon	1. Introduction to the Comparative Study of the Romance languages	2 1st half-year.	2 Gr.	2
Prof. Sheldon	2. Phonetics, with special reference to the explanation of sound-changes in the Romance languages. — Sievers's Grundzüge der Phonetik. — Sweet's Handbook of Phonetics. — Lectures. — One thesis	2 2d half-year.	3 Gr.	3

COURSES OF INSTRUCTION. — CONTINUED.

	PHILOSOPHY.			
	INTRODUCTORY COURSES.			
Dr. Ward	1. Introductory lectures on the subject-matter and methods of Philosophy, together with the general character of primitive thought. — Survey of the Hindu, Chinese, Greek, scholastic, and modern philosophies, to to the end of the 18th century. — Collateral reading; frequent written reviews; two theses by each student	3	1 Gr., 12 Se., 13 Ju., 22 So., 6 Fr., 8 Sp.	62
Prof. James	2. Logic and Psychology. — Jevons's Elementary Lessons in Logic. — Ladd's Physiological Psychology. — Explanatory and supplementary lectures, with frequent recitations or brief examinations	3	4 Se., 39 Ju., 32 So., 12 Sp.	87
Prof. Royce	3. Logic and Psychology. — *First half-year:* Lectures on Logic (Deductive and Inductive). — *Second half-year:* Lectures on Psychology based on Ladd's Physiological Psychology	3	3 Se., 10 Ju., 13 So., 1 Fr., 2 Sp., 1 Di.	30
	ADVANCED COURSES.			
Prof. James	4. Ethics. — Recent English contributions to Theistic Ethics. — Martineau's Types of Ethical Theory, Vol. II. — Martineau's Study of Religion. — Recitations and Lectures. — Theses (each student was expected to employ half of the time devoted to this course in the preparation of a thesis involving the reading of several volumes; the theses averaged 50 pages in length)	3	4 Gr., 20 Se., 10 Ju., 3 Di.	37
Prof. Bowen	[6. Earlier French Philosophy, from Descartes to Leibnitz, and German Philosophy from Kant to Hegel	3	Omitted in 1888–89.	

Prof. Bowen	7. Philosophy in Germany since 1780, including Kant and Hartmann. — Schopenhauer's Die Welt als Wille und Vorstellung. — Hartmann's Philosophie des Unbewussten. — Kant's Kritik der reinen Vernunft	3	9 Gr., 6 Se.	15
Prof. Royce	13. Philosophy of Nature, including the modern doctrine of Evolution. — Spinoza's Ethics. — Spencer's First Principles. — Lectures. — Two theses by each student	3	8 Gr., 17 Se., 7 Ju., 1 So., 3 Sp., 2 Di.	38
Prof. Peabody	11. The Ethics of Social Reform. — The questions of Charity, Divorce, the Indians, Labor, Prisons, Temperance, etc., as problems of practical Ethics. — Lectures, essays, and practical observations	2	3 Gr., 51 Se., 23 Ju., 3 So., 3 Sp., 1 Sc.	84
Prof. Peabody	*10. The Philosophy of Religion. — Its history from Lessing to Schleiermacher. — Its method and principles. — Lectures and essays	1	4 Gr., 4 Se., 11 Di.	19
	COURSES FOR SPECIAL RESEARCH.			
Prof. James	20*a*. Questions in Psychology (with laboratory work). — Lectures. — Study of special subjects by the students	4	5 Gr., 2 Se.	7
Prof. Royce	20*b*. Questions in Metaphysics. — The Critical Philosophy of Kant, with especial reference to the history and analysis of the Kritik der reinen Vernunft; analysis of the text and critical discussion of Kant's philosophy. — Two theses and two reports upon topics of importance for the understanding of the Kritik were required of every student	2 or 3	7 Gr.	7
Prof. Palmer	[20*c*. Questions in Ethics		Omitted in 1888–89.	

COURSES OF INSTRUCTION. — CONTINUED.

	POLITICAL ECONOMY.			
Prof. Taussig and Mr. Huntington	1. *First half-year:* Mill's Principles of Political Economy. — Lectures on Social Questions	3	1 Gr., 19 Se., 83 Ju., 95 So., 4 Fr., 24 Sp., 3 Sc., 3 Dv. (Four sections)	232
	Second half-year: Division *A* (theoretical). Cairnes's Leading Principles of Political Economy. — Lectures on Banking and Finance	3	1 Gr., 8 Se., 39 Ju., 60 So., 4 Fr., 10 Sp., 2 Sc., 3 Di. (Two sections)	127
	Division *B* (descriptive). Hadley's Railroad Transportation. — Laughlin's History of Bimetallism in the United States. — Lectures on Banking and Finance	3	11 Se., 44 Ju., 35 So., 14 Sp., 1 Sc. (Two sections)	105
Prof. Taussig	*2. History of Economic Theory.—Examination of selections from leading writers. — Lectures and discussions; one extended thesis from each student	3	13 Se., 9 Ju., 2 So.	24
	[*3. Investigation and Discussion of Practical Economic Questions	3	Omitted in 1888–89.	
Mr. Gray	4. Economic History of Europe and America since the Seven Years' War. — Lectures and written work	3	1 Gr., 16 Se., 46 Ju., 27 So., 4 Sp., 1 Sc.	95
	[*5. Economic Effects of Land Tenures in England, Ireland, France, and the United States		Omitted in 1888–89.	
Prof. Taussig	*6. History of Tariff Legislation in the United States. — Lectures and reports on special topics	2 2d half-year	18 Se., 14 Ju., 1 So., 1 Sc.	34
Prof. Dunbar	*7. Taxation, Public Debts, and Banking	3	3 Gr., 3 Se., 1 Ju.	7
Prof. Dunbar	*8. History of Financial Legislation in the United States	2 1st half-year	28 Se., 12 Ju., 3 Sp., 1 Sc.	44
Mr. Gray	*9. Management and Ownership of Railways. — Lectures and written work	2 2d half-year	5 Se., 8 Ju.	13

Prof. Dunbar	*20. Special Advanced Study and Research:			
	(*a*) History of the Refunding Act of 1870 and the operations under it		1 Gr.	1
	(*b*) Topics relating to prices as affected by currency		1 Se.	1
	HISTORY.			
Prof. Channing and Dr. Gross	1. Mediaeval and Modern European History (introductory to Courses 4, 5, 6, 9, 10, 11, and 12)	3	2 Ju., 39 So., 104 Fr., 28 Sp., 2 Sc.	175
Prof. Macvane	2. Constitutional Government (Elementary Course, introductory to Courses 11, 12, 13, and 17)	3 1st half-year	27 Ju., 72 So., 74 Fr., 27 Sp., 1 Sc.	201
	[3. History of the Development of Political and Legal Institutions in Greece and Rome to the Fall of the Roman Republic		Omitted in 1888–89.	
Mr. Bendelari	4. Later Roman and Early Mediaeval History. — History of the later Empire, from Diocletian through Justinian. — Early German institutions. — The settlement of the Germanic tribes in Western Europe and the Frankish institutions to the Carolingians	2 or 3	1 Gr., 2 Se., 5 Ju., 2 Sp.	10
Prof. Emerton	[5. The Conflict of Christianity with Paganism. — Origin and development of the Roman Primacy to its alliance with the Holy Roman Empire		Omitted in 1888–89.	
Prof. Emerton	6. The Mediaeval Church, with especial reference to its effect upon public life and upon intellectual and social progress. — Lectures, with collateral reading. — In the first half-year each student had to read and describe in writing one work by an author of the period studied. In the second half-year a thesis on a special topic was required	2	2 Gr., 2 Se., 7 Ju., 1 So., 4 Di., 1 Law	17
Dr. Snow	8. History of Government and Administration in France from the Frankish period to modern times	2	Omitted in 1888–89.	
Prof. Macvane and Dr. Gross	9. Constitutional and Legal History of England to the Sixteenth Century	3	1 Gr., 8 Se., 4 Ju., 2 So., 1 Fr., 1 Sp., 1 Law.	18

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Emerton	10. The Era of the Reformation in Europe, from the rise of Italian Humanism to the close of the Council of Trent. — Lectures, with required reading. — One thesis was required in the first half-year	2	3 Gr., 31 Se., 6 Ju., 3 So., 2 Sp., 6 Di.	51
Mr. Bendelari	11. European History during the Seventeenth Century and the first half of the Eighteenth. — The thirty years war; the history of France from Richelieu to Louis XV.; the history of England from James I. to Anne. (Hallam's Constitutional History)	3	1 Gr., 10 Se., 27 Ju., 14 So., 6 Fr., 4 Sp.	62
Profs. Macvane and Channing	12. European History from the Middle of the Eighteenth Century	3	1 Gr., 22 Se., 50 Ju., 39 So., 5 Sp.	117
Prof. Channing	18. American Colonial History (to 1783). — Lectures and collateral reading. — Four essays required of each student	3	1 Gr., 13 Se., 14 Ju., 9 So., 4 Fr.	41
Prof. Hart	13. Constitutional and Political History of the United States (1783–1861). — Lectures and collateral reading. — Five or six special reports, each necessitating from three to twelve hours' work in the Library, under the direction of an assistant, were required of each student	3	1 Gr., 41 Se., 35 Ju., 14 So., 1 Fr., 6 Sp., 1 Sc., 1 Law	100
Prof. Hart	17. General History of the United States. — Lectures, with collateral reading. — Three special reports, each necessitating from four to ten hours' work in the Library, under the direction of an assistant, were required of each student	3 2d half-year	1 Se., 10 Ju., 18 So., 28 Fr., 13 Sp., 1 Sc.	71
Profs. Macvane and Hart	*14. Constitutional Government (Advanced Course)	3	2 Gr., 4 Se., 2 Ju.	8
Dr. Snow	*15. Elements of Public International Law. — History of Treaties. — Study of Hall's International Law (as text book), compared with Bluntschli and Dana's Wheaton, and a daily discussion of cases taken from Cobbett's Cases and the English, American, and French Admiralty Reports. — Study of European and American Diplomacy since 1789	3	2 Gr., 37 Se., 8 Ju., 1 Sp.	48

Prof. Everett	*16. Studies in the Comparative History of Religions, particularly the Vedic religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese religions. — Lectures and collateral reading	2	2 Gr., 18 Di.	15
	*20. Special Advanced Study and Research:			
Prof. Emerton	(*a*) Topics in Mediæval and Church History (in connection with Courses 5 and 6). The topics selected were: The Letters of St. Bernard; the Influence of the Roman Law on the Germanic Constitution in the Twelfth and Thirteenth Centuries		2 Gr.	2
Dr. Gross	(*b*) Topics in Mediaeval Municipal History		1 Gr.	1
Prof. Macvane	(*c*) Topics in Constitutional Government		1 Gr., 1 Se.	2
Prof. Hart	(*d*) Topics in the Political and Constitutional History of the United States since 1861. — Bibliographical exercises. — Lectures by the students before the class. — Preparation of elaborate theses on constitutional subjects. — Lectures, by two students, before the class in Course 13		1 Gr., 5 Se., 2 Law	8
Prof. Channing	(*e*) Topics in American History. — The Social and Economic Condition of the English North American Colonies in 1775. — Each student made a monthly report of work done the preceding month. and at the end of the year embodied the results of his research in an essay		1 Gr., 10 Se.	11
Dr. Snow	(*f*) History of Diplomacy since 1815. Some of the more important special subjects studied were the Treaty of Vienna, 1815, and the subsequent diplomatic history of Europe; the Eastern Question, including various treaties, and the present state of European politics; in the diplomatic history of the United States: the Monroe Doctrine, the Canal Question, South American policy, Fisheries Question, Samoan Question, etc.	2	2 Se.	2

COURSES OF INSTRUCTION. — CONTINUED.

	ROMAN LAW.			
Mr. Schofield	1. History and Institutes of Roman Law. — Institutes of Justinian. — Selections from the Institutes of Gaius	3	1 Gr., 15 Se., 5 Ju., 2 So., 1 Fr., 1 Sp.	25
	[2. Advanced study of special topics. — Selections from the Digest		Omitted in 1888–89.	
	FINE ARTS.			
Mr. Moore	1. Principles of Delineation, Color, and Chiaroscuro. — Lectures, with collateral reading: Ruskin's Elements of Drawing, and Modern Painters (about half of Vol. I., eight chapters of Vol. III., 3 chapters of Vol. IV.); Sir Joshua Reynolds' Discourses (the Eleventh Discourse); Pyne's Perspective. — Practice in Drawing and in the use of Water-colors (four hours a week)	9	1 Gr., 5 Se., 8 Ju., 13 So., 4 Fr., 4 Sp., 2 Sc.	37
Mr. Moore	2. Principles of Design in Painting, Sculpture, and Architecture. — Lectures, with collateral reading: Ruskin's Ariadne Florentina (the whole volume) and Modern Painters (part of Vol. IV.); Viollet-le-Duc's Dictionnaire Raisonné de l'Architecture française s. vv. *Construction*, *Contre-Fort*, *Chapiteau*, *Messeau*, *Pilier*, *Sculpture*, *Vitrail*, and *Voute*. — Practice in Drawing and Water-color (two to three hours a week)	6	5 Se., 4 Ju.	9
Prof. Norton	3. Ancient Art	3	5 Gr., 75 Se., 78 Ju., 63 So., 1 Fr., 25 Sp.. 3 Sc.	250
Prof. Norton	[4. Roman and Mediaeval Art	3	Omitted in 1888–89.	
Prof. Norton	*3. Literature of the Fine Arts in Italy during the Middle Ages and the Renaissance, with special study of Dante	3	3 Gr., 1 Se., 1 Ju.	5

	MUSIC.			
Prof. Paine	1. Harmony. — Jadassohn's Harmony. — Written exercises on figured bases. — Practice in harmonizing given melodies	3	2 Se., 2 Ju., 3 So., 10 Fr., 2 Sp.	19
Prof. Paine	2. Counterpoint. — Jadassohn's Counterpoint. — Written exercises in two, three, and four-part Counterpoint. — Strict and free imitation. — Composition of short organ preludes. — Songs with piano accompaniment	2	1 Gr., 4 Se., 3 So., 1 Sp.	9
Prof. Paine	[3. History of Music		Omitted in 1888–89.	
Prof. Paine	*5. Canon and Fugue. — Jadassohn's Canon and Fugue. — Practice in musical composition. — Piano pieces and a string quartet were composed	2	1 Gr., 2 Se.	3
Prof. Paine	[*6. Free Thematic Music. — Forms of Modern Instrumental Music	2	Omitted in 1888–89.	
Prof. Paine	*7. Instrumentation. — Exercises in scoring for various combinations of orchestral instruments, and for the full orchestra. — Score reading. — The scores of Beethoven's Symphonies and other works played in the class-room. — Study of the orchestral scores of classical oratorios, operas, and cantatas	1	1 Gr., 2 Se., 1 Sp.	4
	MATHEMATICS.			
Prof. C. J. White	*A.* Logarithms. — Plane Trigonometry, with its applications to Surveying and Navigation	3 1st half-year	3 Ju., 7 So., 70 Fr., 15 Sp., 3 Sc. (Two sections)	98
Prof. C. J. White	*B.* Analytic Geometry (Elementary Course)	3 2d half-year	1 Se., 2 Ju., 5 So., 36 Fr., 5 Sp. (Two sections)	49
Prof. Byerly	*C.* Analytic Geometry (Extended Course). — Lectures on Plane and Solid Analytic Geometry. — Books of reference: Puckle's Conic Sections, Salmon's Conic Sections, Salmon's Geometry of Three Dimensions	3	1 Gr., 1 Se., 7 So., 11 Fr., 1 Sp., 3 Sc.	24
Mr. Sawin	*D.* Algebra. — Wentworth's College Algebra (Chapters 9–18, 21, 22, and part of Chapter 29)	3	8 Se., 8 Ju., 18 So., 32 Fr., 12 Sp., 2 Sc. (Two sections)	80

COURSES OF INSTRUCTION. — CONTINUED.

Mr. Sawin	*G.* Algebra (Extended Course). — Wentworth's College Algebra (Chapters 10–18, 21, 22, 29, 30)	3	2 Ju., 1 So., 15 Fr., 2 Sp.	20
Mr. Sawin	*E.* Solid Geometry. — Chauvenet's Geometry (Books VI.–IX.). — Wentworth and Hill's Exercises	3	4 Se., 15 Ju., 17 So., 69 Fr., 19 Sp. (Two sections)	124
Mr. Sawin	*F.* Elementary Mechanics. — Goodwin's Elementary Statics. — Easy problems in Dynamics	3	6 Ju., 8 So., 11 Fr., 4 Sp., 1 Sc.	30
Prof. C. J. White	1. Practical applications of Trigonometry. — Spherical Trigonometry. — Applications of Spherical Trigonometry to Astronomy and Navigation	2	1 Ju., 7 So., 4 Fr., 1 Sc.	13
Prof. C. J. White	2. Differential and Integral Calculus (First Course)	3	1 Se., 6 So., 25 Fr., 1 Sp., 3 Sc.	36
Prof J. M. Peirce	3. Analytic Geometry (Higher Course). — Theory of Equations, as entering into Analytic Geometry; applications of this Theory; Homogeneous, Trilinear, and Tangential Coördinates; Inharmonic Properties of Conics; Reciprocal Polars; elements of Analytic Geometry of Three Dimensions (equations of First and Second Degrees)	3	1 Gr., 1 Se., 1 Ju., 5 So.	8
Prof. B. O. Peirce	4. The Elements of Mechanics. — The Statics of Rigid Bodies treated Analytically. — The Elements of Graphical Statics. — The Kinetics of Particles. — The Kinetics of Rigid Bodies which move parallel to a Plane	4	2 Gr., 3 Se., 8 Ju., 3 So., 1 Sc.	17
Prof. Byerly	5. Differential and Integral Calculus (Second Course). — Lectures and Problems. — Text-book: Byerly's Integral Calculus, 2d ed.	3	2 Gr., 2 Se., 5 Ju.	9
Prof. J. M. Peirce	[6. Quaternions and Theoretical Mechanics	3	Omitted in 1888–89.	
Prof. J. M. Peirce	[7. Higher Plane Curves		Omitted in 1888–89.	

Prof. Byerly	8. Analytic Mechanics. — Problem course, with explanatory lectures. — Books used: Walton's Problems in Theoretical Mechanics, Minchin's Statics, Tait and Steele's Dynamics of a Particle, Routh's Rigid Dynamics	3	3 Gr., 3 Se., 2 Ju.	8
Prof. J. M. Peirce	9. Quaternions and Theoretical Mechanics (Second Course). — The Application of Quaternions to Geometry, Mechanics, and Physics; including the theory of the Differentiating Operator, and of Fresnel's Wave and Index Surfaces	3	2 Gr.	2
Profs. Byerly and B. O. Peirce	10. Trigonometric Series; Introduction to Spherical Harmonics. — Theory of the Potential. — Lectures and Problems. — Books used: Riemann's Partielle Differentialgleichungen, Ferrer's Spherical Harmonics, Peirce's Newtonian Potential Function	3	4 Gr., 1 Se.	5
Prof. B. O. Peirce	[11. Hydromechanics		Omitted in 1888–89.	
Prof. J. M. Peirce	[13. The Theory of Functions. — The General Theory of Monotropic Functions of Complex Variables, with the special development of the theory of Singly and Doubly Periodic Functions (Briot et Boquet, Livres I.–IV., omitting most of the sections referring to Polytropic Functions); the main principles of the theory of the Riemann Surfaces and of the Isogonal Relations (leading chapters of Holzmüller)	3	3 Gr.	3
	20. Special Advanced Study and Research:			
Prof. J. M. Peirce	(*a*) Multiple Algebra. — Algebraic Functions and Polytropic Functions in general; Periods of Definite Integrals. — Portions of Briot et Bouquet	2	2 Gr.	2
Mr. Sawin	(*b*) Higher Algebra (First Course). — Theory of the general cubic and biquadratic. — Symmetric Functions. — Resultants. — Discriminants. — Invariants and Covariants of the Cubic, Quartic, and Quintic. — The general Invariant-Theory. — Aronhold's symbolic notation	2	4 Gr., 1 Se.	5

COURSES OF INSTRUCTION. — CONTINUED.

	PHYSICS.			
Profs. Trowbridge, B. O. Peirce, and Hall, and Drs. Whiting and Sheldon	*A*. (Prescribed for Freshmen.) Thirteen lectures on Matter and Motion; Color; Sound; Prime Movers; Electric Lighting; Electricity of High Tension; Steady Current of Electricity; Cable Telegraphy; Electromagnetic Induction and Telephony; Light; Conservation of Energy; and Physical Measurements	2d half-year	1 Ju., 3 So., 272 Fr., 44 Sp., 7 Sc.	327
Prof. Hall	*B*. Experimental Physics. — A course of experiments, following the Descriptive List of Experiments in Physics issued by the College, omitting about one fourth of the exercises. — Lectures (once a week). — Laboratory work (two hours a week)		12 Se., 8 Ju., 8 So., 28 Fr., 10 Sp., 5 Sc.	71
Dr. Whiting	*C*. Experimental Physics. — Measurement in Mechanics, Sound, Heat, Light, Electricity, and Magnetism, covering the ground of the Sixty Experiments in Physical Measurement published by the University. — Lectures (twice a week). — Laboratory work (in three sections, each four hours a week)		2 Gr., 1 Se., 5 Ju., 11 So., 8 Fr., 4 Sp., 5 Sc.	36
Prof. Hall	1. General Descriptive Physics. — Lectures and laboratory work (each two hours a week). — Text-book: Everett's Deschanel's Natural Philosophy, omitting some of the more difficult portions		1 Gr., 1 Se., 10 Ju., 4 So., 6 Fr., 5 Sc.	27
Dr. Whiting	2. Sound and Color, with special applications to electrical and telephonic apparatus and to photography. — Lectures (once or twice a week) and laboratory work (three to six hours a week):			
	Section I. *First half-year:* Deschanel's Sound and Lockwood's Practical Information for Telephonists		1 Gr., 1 Ju., 3 So., 1 Fr., 1 Sp., 2 Sc.	9
	Second half-year: Rood's Chromatics and Abney's Treatise on Photography		4 So., 1 Fr., 2 Sp., 2 Sc.	9
	Section II. Work the same as in Course *C*		3 Sc.	3

Prof. B. O. Peirce and Mr. Lefavour	3. Electrostatics, Electrokinematics, and parts of Electromagnetism. — Lectures (once a week) and laboratory work (six hours a week)		1 Gr., 1 Se., 3 Ju., 1 So.	6
Prof. Trowbridge and Dr. Sheldon	4. Electrodynamics, Magnetism, and Electromagnetism. — Lectures on the mathematical theory of the subject with references to Maxwell's Electricity, Mascart's Electricity, and Wiedemann's Electromagnetismus. — Accurate quantitative work in the laboratory, together with qualitative lecture-room experiments performed by the students themselves	6 to 8	2 Gr., 1 Se., 1 So.	4
Prof. Trowbridge	5. Light. — A general treatment of Optical Phenomena. — Lectures and laboratory work based on Glazebrook's Optics and Daguin's Traité de Physique	6	1 Se.	1
Prof. Hall	9. The Mathematical Theory of Electrodynamics and Electromagnetism. — Maxwell's Electricity and Magnetism (selections, chiefly from Vol. II.). — Riemann's Schwere, Elektricität, und Magnetismus (selections)		1 Gr.	1
	20. Special Advanced Study and Research:			
Prof. Trowbridge	(*a*) Spectrum Analysis	20	1 Gr.	1
Prof. B. O. Peirce	(*b*) Electrostatic Measurements		Omitted in 1888–89.	
Dr. Whiting	(*c*) Sound and Electricity		Omitted in 1888–89.	
Prof. Hall	(*d*) Electromagnetism		Omitted in 1888–89.	
	CHEMISTRY.			
Prof. Cooke	*A.* Elementary Chemistry (Prescribed for Freshmen)	1 1st half-year	1 Se., 5 So., 276 Fr., 55 Sp., 10 Sc.	347
Prof. Cooke and Dr. Huntington	*B.* Experimental Chemistry. — Lectures (once a week) and laboratory work (two hours a week)		1 Se., 5 Ju., 9 So., 43 Fr., 16 Sp., 7 Sc.	81
Dr. Huntington	*C.* Elementary Lithology. — Study of the mineral constituents of the ordinary rocks, and of their associations. — Lectures (twice a week). — Laboratory work with blow-pipe		2 Ju., 2 So., 1 Fr., 2 Sp., 1 Sc.	8

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Jackson	1. **General Descriptive Chemistry**, including its applications in the arts, and embracing the scheme of the chemical elements. — Lectures (twice a week). — Laboratory work (four hours a week), or recitations (once a week) and laboratory work (two hours)		11 Se., 20 Ju., 27 So., 8 Fr., 8 Sp., 2 Sc. (Two sections)	76
Dr. Huntington	2. **Determinative Mineralogy.** — Lectures (three times a week) in the Mineral Cabinet and practical exercises		1 Gr., 8 Se., 6 Ju., 3 So., 5 Fr., 4 Sp., 2 Sc.	29
Prof. Hill & Dr. L. L. Jackson	3. **Qualitative Analysis.** — Laboratory work, with twenty lectures		1 Gr., 13 Se., 27 Ju., 2 So., 5 Sp., 2 Sc.	50
Profs. Cooke and H. B. Hill	4. **Quantitative Analysis.** — Laboratory work in Gravimetric and Volumetric Analysis. — Lectures were given at the beginning of each analysis	9	9 Se., 7 Ju., 2 So., 1 Sp.	19
Profs. Cooke and H. B. Hill	4*a*. Quantitative Analysis (Second Course)		Omitted in 1888–89.	
Prof. H. B. Hill	5. **The Carbon Compounds.** — Lectures (three times a week). — Laboratory work		2 Gr., 7 Se., 3 Ju.	12
Prof. Cooke	[*6. Advanced Problems in Inorganic Chemistry		Omitted in 1888–89.	
Prof. Cooke	[*7. Crystallography and the Physics of Crystals		Omitted in 1888–89.	
	*20. **Special Advanced Study and Research:**			
Prof. Cooke	(*a*) **Determination of Atomic Weights**		Omitted in 1888–89.	
Prof. Jackson	(*b*) **Aromatic Compounds**		Omitted in 1888–89.	
Prof. H. B. Hill	(*c*) **Organic Chemistry.** — Original investigation. — Constant laboratory work		1 Gr., 2 Se.	3
Prof. Jackson	(*d*) **Inorganic Chemistry.** — Original investigation. — The results of the work of two of the students were published in a paper entitled: "On some Nitroderivatives of Metabromtoluol," by W. B. Bentley and W. H. Warren	18	3 Se.	3

NATURAL HISTORY.

BIOLOGY.

Prof. Mark	2. Zoölogy. — Lectures (twice a week), giving a general survey of the animal kingdom, with an outline of human physiology, and treating of certain general questions. — Laboratory work (four hours a week)	1st half-year	1 Gr., 5 Se., 12 Ju., 16 So., 15 Fr., 4 Sp., 5 Sc.	58
Prof. Goodale and Mr. Ganong	3. Botany. — Lectures (once or twice a week) on Vegetable Morphology and Physiology, supplemented by laboratory practice (one to three hours a week) in plant dissection and analysis A series of supplementary lectures, illustrated by the stereopticon, was given on Saturday mornings, with geographical illustrations of Structural and Cryptogamic Botany	2d half-year	7 Se., 18 Ju., 42 So., 49 Fr., 12 Sp., 6 Sc.	134
Prof. Farlow and Mr. G. H. Parker	5. Biology. — *First half-year:* Botany; *second half-year:* Zoölogy. — Lectures (one to three a week) and laboratory work (six hours a week)		1 Gr., 3 Se., 14 Ju., 7 So., 4 Sp., 3 Sc.	32
Mr. G. H. Parker	6. Zoölogy (Second Course). — Comparative Anatomy of Vertebrates. — Lectures, recitations, and demonstrations (twice a week). — Laboratory work (six to eight hours a week): Dissection of skate, bony-fish, salamander, pigeon, and cat. Each student kept a record of his dissections in the form of drawings in his laboratory note-book		4 Se., 4 Ju., 3 Sp., 2 Sc.	13
Prof. Goodale	7. Botany (Second Course). — The histology of phaenogamic plants. — Physiological Botany. — Laboratory work (four to six hours a week) with lectures. Each student investigated a special problem and reported on it at the end of the year		1 Se., 4 Ju., 1 So., 2 Fr., 1 Sc.	9
Prof. Farlow	*23. Cryptogamic Botany. — Lectures (twice a week) and laboratory work (six hours a week)	2d half-year	1 Gr., 2 Se., 1 Sc.	4
Prof. Mark	*13. Microscopic Anatomy. — Lectures (two or three a week) on methods of microscopic study, and on the anatomy and histology of hydra, taenia, and lumbricus. — Laboratory work (six to eight hours a week) on the same animals	1st half-year	3 Gr., 2 Se., 1 Ju., 1 Sp., 2 Sc.	9

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Shaler	*14. Palaeontology. — Lectures (two or three a week), and laboratory work		1 Gr., 1 Se., 1 Sp., 3 Sc.	6
Dr. Slade	*21. Comparative Osteology. — Laboratory work (three to six hours a week)		2 Se., 3 Ju.	5
	COURSES FOR SPECIAL RESEARCH.			
Prof. Mark	*9. Embryology. — Investigation of special subjects, the results presented in a thesis		4 Gr., 1 Instructor.	5
Prof. Hagen	*10. Entomology		Omitted in 1888–89.	
Prof. Goodale	11. Experimental Vegetable Physiology. — Systematic and Economic Botany. — Investigation of a special problem, the result embodied in a report, by each student	6	1 Se., 1 Ju.	2
Prof. Farlow	*12. Structure and Development of Cryptogams. — Laboratory investigation, devoted to the preparation of an original thesis		3 Gr., 1 Se., 1 Sp.	5
Prof. Shaler	*17. Palaeontology		1 Gr., 1 Sc.	2
	GEOLOGY.			
Mr. Harris	1. Meteorology (first half-year) and Physical Geography (second half-year): Two lectures and a laboratory exercise (one hour) each week, with study of weather maps, observations on the weather, and work with topographical maps and models	3	11 Se., 5 Ju., 6 So., 11 Fr., 2 Sp., 3 Sc.	38
Prof. Davis	*20. Physical Geography and Meteorology (Second Course). — Lectures on special problems by the Instructor. — Reports and theses on selected topics by students. — Individual conferences	2	5 Se.	5
Prof. Shaler	4. Geology. — Lectures. — Dana's Manual of Geology	2 or 3	26 Ju., 47 So., 47 Fr., 33 Sp., 5 Sc.	158

Mr. Harris	4a. Geology. — Laboratory work with geological models, maps, and specimens. Two exercises per week of two hours each, with occasional lectures, until April 1. After April 1, six field exercises (one afternoon each week)	4	1 Se., 15 Ju., 20 So., 12 Fr., 14 Sp., 3 Sc. (Four sections)	65
Profs. Shaler and Davis and Mr. Wolff	*8. Geology (Second Course). — Lectures and field-work		1 Gr., 8 Se., 20 Ju., 5 So., 1 Fr., 5 Sp., 4 Sc.	44
Prof. Shaler	*15. Historical Geology. — Laboratory work		2 Sc.	2
Profs. Shaler and Davis and Messrs. Wolff Harris	*16. Geological Field-work, for training in the principles of Geological Surveying		3 Gr., 6 Se., 5 Sc.	14
Prof. Whitney	[*18. Economical Geology		Omitted in 1888–89.	
Mr. Wolff	22. Petrography. — Lectures (twice a week). — Laboratory work (five to six hours a week)		3 Gr., 3 Sc.	6
Prof. Whitney	*25. Mineral Veins and Metalliferous Deposits; their mode of occurrence and theories of their origin. — Lectures (once a week). The students were required to write up their notes as fully as possible, diagrams being added, either copies of those put on the board by the Instructor, or additional ones from authorities furnished		2 Gr., 3 Se., 1 So.	6
Prof. Whitney	*24. North America: its Physical Geography and Geology; the past and probable future development of its material resources. — Lectures (twice a week). The students were expected to take rough notes and then to work them out at home, adding diagrams and references to sources from which additional and fuller information could be obtained		1 Gr., 19 Se., 5 Ju., 2 So., 1 Sc.	28

Six lectures, intended for Freshmen studying Greek, but open to the public:

1 and 2. Plato, Socrates, and the Sophists, by Professor Goodwin.
3. Homer in Greek Life and Thought, by Professor Wright.
4. The Study of Homer, by Professor Wright.
5 and 6. The Greek Theatre, by Professor J. W. White.

Euripides and the Story of Medea in Ancient Art (illustrated lecture), by Dr. Morgan.

The Athenian Acropolis (eight illustrated lectures), by Dr. Wheeler.

The Opportunity to excavate Delphi by the American School at Athens, by Professor Norton.

The Poetry of Farm Life: an introduction to the Georgics, by Mr. C. P. Parker.

The Gunnlaugssaga Ormstungu (reading), by Mr. Babbitt.

The Political Outlook in France, by Professor Cohn.

The Centennial of the French Revolution, by Professor Cohn.

Modern Anthropology; or, The Scientific Method Applied to Man, by Dr. Ward, four lectures as follows:

1. Modern Anthropology: Its History, Method, and Sphere.
2. Man's Origin, Antiquity, and Development.
3. Anthropology and Sociology.
4. Benefits of Anthropological Study.

Music as a Profession, by Mr. Arthur Foote.

The Scientific Appliances of the Jefferson Physical Laboratory, and the Scientific Work now being done there (illustrated lecture), by Professor Trowbridge.

Applications of Physical Science: The Measurement of Light Waves, by Professor A. A. Michelson.

Applications of Physical Science: Composite Photography, by Professor Henry P. Bowditch, M.D.

The Acoustic Principles underlying the Art of Telephony (illustrated lecture), by Professor Charles R. Cross, of the Massachusetts Institute of Technology.

The Dudleian Lecture for 1888 (fourth subject): by Professor George P. Fisher, D.D., of Yale University.

Addresses at College Conference Meetings, by President Eliot, Professor F. G. Peabody, Professor Norton, Rev. John Graham Brooks, Mr. George W. Cable, Professor Goodale, Roger Wolcott, Esq., Professor Joseph Henry Thayer, Professor Shaler, and Rev. Edward Everett Hale, D.D.

An address before the Harvard Total Abstinence League, by Professor F. G. Peabody.

Before the Harvard Classical Club:

The Medea of Euripides (two lectures, with readings), by Mr. W. C. Lawton.

Before the Deutscher Verein:

The Intellectual Life of Germany, five lectures as follows:

Das Deutschland von Heute (lecture in German), by Mr. Henry Villard, of New York.

Modern German Thought and its Significance to English-speaking People, by Professor W. T. HARRIS, of Concord.

Individualism as a Force in German Literature, by Professor FRANCKE.

German Engraving in the 16th Century (illustrated lecture), by Mr. S. R. KOEHLER, of the Boston Art Museum.

Goethe as Autobiographer, by Professor A. A. RIPLEY, of Boston.

Before the Conférence Française:

L'Art du Comédien (lecture in French), by Monsieur COQUELIN.

Before the Harvard Philosophical Club:

Memory and the Rational Means of improving it, by Dr. EDWARD PICK.

Before the Harvard Finance Club:

History of Legal Tender in the United States, by Hon. JOHN JAY KNOX.

The Isthmian Canal, by Mr. JOHN C. SOLEY.

The Requirement of Impartiality and Uniformity in Railroad Service, by Hon. THOMAS M. COOLEY.

Before the Harvard Natural History Society:

Life among the Aborigines of Australia, by Mr. CARL LUMHOLZ.

Before the Cambridge Indian Association:

Alaska and its Indians, by Dr. SHELDON JACKSON, U. S. Superintendent of Schools in Alaska.

In the Announcement of Instruction for 1889-90, which the Faculty issued in May, a new department, that of Germanic Philology, is recognized for the first time. Under this head are included the half-course in Gothic, which has been occasionally given heretofore by Professor Sheldon, a half-course in Old and Middle High German and Historical Grammar, by Professor von Jagemann, and a course in Icelandic (Old Norse), by Mr. Kittredge. The title of the Semitic department was changed to 'Semitic Languages and History' in consequence of the addition of three historical courses, requiring no knowledge of Semitic languages, to the list, in which Professor Lyons' half-course on Babylonian-Assyrian history had been the only one of this character. Of the three courses referred to the first two had previously been established in the Divinity School; the third is new:—

History of Israel, political and social, from the period of the Judges until Ezra. *Two hours.* Professor LYON.

History of the Hebrew Religion, with comparison of other Semitic Religions. *Two hours.* Professor TOY.

History of the Spanish Califate. *Half-course. One hour.* Professor TOY.

In each of the departments of Greek and Latin a more elementary course in composition was added for Freshmen who come to College without training in writing those languages, experience having shown that there is a demand for such instruction. The following new courses were also announced in those departments: —

The present state of Archaeological Discovery and Research in Greece (selected topics). *Two hours.* Dr. TARBELL.

Ancient Philosophy as set forth by Cicero. *Three hours, first half-year.* Professor GREENOUGH.

Practice in speaking Latin. *Half-course. Two hours.* Professor ALLEN.

The Roman Religion and Worship. *Half-course. Three hours, first half-year.* Professor ALLEN.

Latin Grammar (Syntax). *Half-course. Two or three hours, second half-year.* Professor Greenough.

In the Forensic courses prescribed for Juniors and Seniors the plan in use for some years past, under which each course consisted of a forensic, a thesis (of double the length of a forensic), and an examination, was abandoned, and the old plan of simply requiring four forensics in each of the two years was restored. One valuable feature, however, of the recent method was retained, — the plan of offering the student a wide range of subjects, selected with reference to the work of the various elective courses, so that he can bring his forensic work into relation with the rest of his studies. The following were added to the list of elective courses in English: —

English Literature of the Elizabethan period, exclusive of the Drama and of Bacon. *Half-course. One hour.* Professor WENDELL.

History and Principles of English Versification. *Half-course. One hour.* Professor BRIGGS.

In French a course for special research was added to the list. In Philosophy the course in English philosophy was restored, to be given by Mr. Santayana. In Political Economy, Professor Dunbar's half-course on the management and ownership of railways was enlarged to a full course, and the following course was added: —

Theory and Methods of Taxation, with special reference to local taxation in the United States. *Half-course. Three hours, first half-year.* Professor DUNBAR.

In History the course on the development of political and legal institutions in Rome to the fall of the Republic, which has not been given for some years, was revived and will be given by Mr. Bendelari. In Mathematics, Course *F* (Elementary Mechanics) was dropped from the list in consequence of the change in the requirements for admission, mentioned above; and the two courses in Algebra, *D* and *G*, were reduced to one, with the understanding, however, that an advanced section should be formed for the students of greater proficiency for whom the second course had formerly been provided. The following new courses appear in this department: —

The Theory of Equations. *Half-course. Three hours, second half-year.* Mr SAWIN.

Higher Algebra (Quantics). *Three hours.* Mr. SAWIN.

Hydrostatics, Hydrokinematics; Force Functions and Velocity Potential Functions and their uses. *Three hours.* Professor B. O. PEIRCE.

Problems in the Mechanics of Rigid Bodies. *Half-course. One hour.* Professor BYERLY.

In the case of two geological courses the experiment was tried of putting a full course in a half-year, every full course having heretofore extended through the whole year. Dr. Wolff's course on Petrography was made a four-hour course for the first half-year, and Professor Whitney's course on Economic Geology was assigned to the same hours in the second half-year. The nature of the work in these courses and their relation to each other render this arrangement desirable, but it is subject to the serious drawback that under our present system a four-hours' course necessarily comes into conflict with twice as many other studies as a three-hour course.

The whole number of elective courses of instruction offered for the present year was two hundred and twelve, of which one hundred and forty-four are rated as full courses, sixty as half-courses, and eight (mostly advanced courses for special research) may be taken either as full or as half-courses, according to the instructor's estimate of the amount of work demanded by the particular topic investigated. Estimated in full courses, the whole body of instruction offered amounted to one hundred and eighty-two. The distribution of this aggregate among the several departments is shown in the following table, which gives a comparative view of the amount of instruction, both prescribed and elective, offered in the several departments in each of the last eight years: —

ELECTIVE STUDIES.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
Semitic	6	7½	8	8	8	9	9	11
Sanskrit and Zend	4	4	4	4	4	4	2	4
Greek	8	10	15½	13¾	14¼	13½	13½	14
Latin	9	10½	12	14¾	12¾	13½	13	12
Greek and Latin	1	2	3	2	1	2	1	1
English	5½	5	6½	6½	5½	8	9	8
German	8	7	7	6½	7	6	8	8
Germanic Philology	..	..	..	..	..	..	..	2
French	4½	5½	7½	8½	7	7	7	8
Italian	3	2	3	3	3½	3	3	3
Spanish	3	2	3	3	3	3	3	3
Romance Philology	..	..	..	..	1½	2½	4½	4½
Philosophy	9	9	9½	10	11½	11	9½	11½
Political Economy	2½	5½	5½	6	7½	7½	6½	6½
History	12	13	13	11	14½	15½	18½	17½
Roman Law	1½	1½	1½	1½	1½	1	1	1
Fine Arts	3½	3½	2½	4	4	3½	3½	3½
Music	5	4½	5½	5	5	4	3½	3½
Mathematics	9	9½	14½	15½	16½	16½	15	15
Physics	6½	7½	6½	7½	8½	10	12½	13
Chemistry	8	9	8	8	9½	12	11½	12½
Natural History	16½	16½	16	18	20	18½	20	19½
Total, elective	125½	135	152	156½	166	171	174½	182
PRESCRIBED STUDIES.								
Greek	2	2	..	..	..	..	..	..
Latin	2	2	..	..	..	..	..	..
Greek and Latin	¼	¼	..	..	..	..	..	..
English (Rhetoric and Composition)	2	2	2	2	2	2	2	2
German	1	1	1	1	1	1	1	1
French	1	1	1	1	1	1	1	1
Mathematics	2¼	2¼	..	..	..	..	..	..
Physics	1¼	1¼	¼	¼	¼	¼	¼	¼
Chemistry	¼	¼	¼	¼	¼	¼	¼	¼
Total, prescribed	12	12	4½	4½	4½	4½	4½	4½
Total, prescribed and elective	137½	147	156½	161	170½	175½	179	186½

The question of counting work in the Summer schools towards the degree was again before the Faculty, as the votes adopted on that subject the preceding year were provisional only; nor can the Faculty yet be said to have reached any settled policy in the matter. They voted, however, to allow credit, to the extent of a half-course, to advanced geological field-work done in the summer and tested by an examination at the end of the course; and to permit a student to do the work of one of the courses known as Engineering 2 and 4 during the summer, provided he take the mid-year and final examinations at the regular times in the following year.

The great increase in the number of beneficiaries of the College since the establishment of the Price Greenleaf fund suggested to the Faculty the propriety of calling upon such beneficiaries for some return in the shape of service as monitors or assistants, which would be a slight burden to them individually, but in the aggregate of considerable value to the College; and a vote was passed to insert in the Catalogue a notice that the recipients of Price Greenleaf aid may be called upon for such service to an amount not exceeding four hours a week. It is believed that right-minded students will be not only willing but glad to repay to the extent of their ability the benefit they receive, and will be more content to accept aid under these conditions.

Two defects in the working of our college system, one of them of a serious nature, engaged the attention of the Faculty early in the year. The first was our lack of success, thus far, in securing an orderly beginning of work on the first day of the academic year. A part of the irregularity was due to the fact that the September examinations for admission were not completed till three days later, and a considerable number of Freshmen were not admitted till after the exercises had begun. The change in the time of the examinations to obviate this difficulty has been already mentioned. But a still greater source of irregularity was the liberty which students enjoyed of changing their elective studies during the first fortnight of the year. I have explained in previous reports how the Faculty has step by step narrowed the period during which the student was allowed to change his elective studies if he found he had not made the best choice. It is very desirable that he should have an opportunity to correct his mistakes, but the consequence of granting a period during which changes could be freely made was shown by experience to be that large numbers of students simply deferred settling their choice until that time. This resulted in great uncertainty in the lists in the several courses, to the annoyance of instructors and the confusion of their returns of absences; and this again was taken advantage of by some students to absent themselves from recitations and lectures, or even from College, for a few days after their registration. The tendency of students also to prolong the Christmas and the April recess, and to take more than the single holiday of Thanksgiving, — this is the second defect I have referred to, — received no adequate check from our regulations, although the returns of absences at these times of the year are sufficiently accurate.

The Faculty had not fairly entered upon the consideration of these evils and their proper remedies, after finishing the routine work which always occupies them during the first months of the year, when the Board of Overseers charged their Committee on Government with an inquiry into the discipline and studies of the College, and also requested me to make to the same committee a full and detailed report on the attendance of students at college exercises, and on other matters referred to in the resolutions instituting the investigation. In response to this request I caused full statistics of the attendance of students to be prepared, and presented them early in January to the Committee on Government, prefacing them with an explanation of the existing regulations relating to attendance, — including a review of the successive steps by which the present system was developed, — and adding a discussion of the propositions which has been made for remedying existing or supposed defects in our system.

The conclusions of the Overseers on the report of the Committee on Government were embodied in a series of recommendations, which were communicated to the Faculty on the fifth of February. In consequence of this communication the deliberations of the Faculty on the revision of the Regulations took a wider range than had been contemplated, and occupied all their available time during the remainder of the year. As the whole subject has been fully explained and discussed in my report to the Committee on Government, and in two special reports made by the Faculty to the President and Fellows for transmission to the Board of Overseers, it will be sufficient to record here the results attained, with such exposition as may be necessary.

The suggestions of the Overseers had two objects in view, the regular attendance of students at lectures and recitations, and their continuous residence at the University in term-time. To secure the latter object they suggested that every student be required to report in person early every morning, with a moderate and fixed allowance for occasional absences. A proposition similar to this, except that it provided for a report three times a week instead of every day, had been discussed by the Faculty in 1880. In deference to the wishes of the Overseers the subject was again carefully considered, and a plan was worked out in detail by a committee charged with that duty; but in the end the Faculty was practically unanimous in the conviction that the measure was inexpedient. They were aware that the evil which it was designed to check was by no means as serious as it was popularly represented to be, and were convinced that an adequate remedy, and one more just to the great majority of the students, would be found in a better regulation of residence and attendance, especially in those particulars which they already had under consideration, and in prompter and more efficient methods of dealing with delinquents.

To secure promptness in beginning the work of each term, a clause was added to the Regulations, requiring every student to register before noon on the first day after the Christmas and April recesses, as well as on the first day of the academic year, when registration has for some years been required. It was further provided that every student, in addition to the general registration at the beginning of the year, shall register at the first exercise in each of his courses of study, both prescribed and elective, and that no change of elective studies shall be made after the beginning of the year except by leave of a committee of the Faculty, to whom application must be made in writing with a full statement of the reasons for the proposed change. Heretofore application to this committee was not required until October 15.

The registration of students in their several courses of study, with the check put upon changes, gives instructors trustworthy lists, and enables them to keep accurate records of attendance, from the outset. To secure greater promptness in dealing with cases of irregularity, it was ordered that returns of absences be made daily, instead of weekly, as heretofore, and recorded at once; and by a standing vote the Faculty authorized the Dean to administer Admonition for neglect of duty at his discretion, without waiting for a vote of the Faculty itself, as has heretofore been necessary.

The existing rules relating to residence and attendance were carefully revised and made more explicit, chiefly with a view to secure prompter information. These rules were as follows: —

Continuous residence at the University is required during term-time. Any student whose residence is interrupted for any cause is required to give immediate notice of the fact to the Secretary; and if his absence is prolonged beyond three days, he is further required to report *in person* to the Secretary immediately on his return.

Any student who has been prevented by serious illness or other exceptional reason from attending college exercises for a definite period, is expected to present to the Secretary, within one week after his return to duty, a clear and explicit statement of the cause of his absence; and if his explanation is deemed sufficient, that fact will be entered on his record. But statements relating to occasional brief indisposition or to causes of absence not strictly unavoidable are not expected and will not be entered on the record.

Habitual or continued absence from college exercises, or irregularity of attendance in the absence of a counter presumption raised by the student's standing as a scholar, will be deemed *prima facie* evidence that the student is not fulfilling the purposes of his residence at the University, and may be made the ground of inquiry into his conduct and purposes, and of action on the part of the Faculty.

As amended, these rules read as follows: —

Continuous residence at the University is required during term-time. No interruption of residence is permissible except for satisfactory reasons, which must be stated orally to the Secretary, or if that is impossible, sent to him in writing, before the student leaves Cambridge. The student is further required to report in person to the Secretary immediately on his return.

A student who is confined to his room by illness, or any other cause that is likely to prevent his attendance on College exercises for several days, is required to send notice of the fact as early as possible to the Secretary.

Any student who has been prevented from attending College exercises for one day or more, is required to present to the Secretary, *immediately on his return to duty*, a clear and explicit statement of the cause of his absence; and if his explanation is deemed sufficient, that fact will be entered on his record. Statements relating to avoidable absences will not be considered.

Habitual or continued absence from college exercises, or irregularity of attendance in the absence of a counter presumption raised by the student's record as a scholar, will be deemed *prima facie* evidence that the student is not fulfilling the purposes of his residence at the University, and may be made the ground of inquiry and of action on the part of the Faculty.

The regulations designed to secure systematic work on the part of students in their several courses were improved by the insertion of a clause requiring instructors to provide suitable tests of proficiency, and now read as follows, the words in italics containing the substance of the amendment: —

Every student is required to satisfy the instructor in each of his courses of study, in such way as the instructor may determine, that he is performing the work of the course in a systematic manner. Instructors *will provide suitable tests (either for all or for a part of their students) with sufficient frequency to give effect to this regulation, and* will report *at once* to the Dean the names of any students who have not satisfied them that they are doing their work systematically.

Any instructor, with the approval of the Dean, may at any time exclude from his course any student who in his judgment has neglected the work of the course. Such exclusion shall be reported to the Faculty at its next meeting.

The application of tests contemplated by this rule, it should be said, is by no means a new thing. The tests are of various kinds, according to the nature of the study. In the composition courses in the several languages, and in the courses in physical science and natural history, the students' work is subject to constant inspection in the shape of written exercises or laboratory note-books. In many other courses, also, written exercises or reports or theses have been demanded; and in probably a majority of courses, while the old method of 'hearing lessons' has been abandoned, the instruction has not taken the form of a lecture pure and simple, but is more in the nature of a conference. Where the number of students is large, this method becomes less practicable, and the instructor depends more on occasional hour-examinations or more frequent ten-minute examinations preceding the regular work of the hour. The Regulations permit him to substitute hour-examinations at pleasure for his regular exercises, provided they are not announced beforehand. If so announced they inevitably monopolize the whole attention of the student, for the time being, and seriously interfere with his work in other courses; and it has therefore been deemed necessary to restrict the number of announced hour-examinations to three for a full course and two for a half-course.

To provide for a general application of these tests the Faculty passed a standing vote, directing the Dean to call on all instructors in November, March, and May, for reports of the scholarship of all their students; and authorizing him to call for reports in January, and April also, concerning students who appear to require special supervision; these reports to be provisional and to be superseded by the final returns at the end of the year.

Another provision that will contribute to systematic study was added in a clause, which aims to secure a proper distribution of the work of students by requiring the written consent of the Dean to any choice of elective courses which calls for attendance on more than three lectures or recitations in those courses on any one day of the week.

In the case of Freshmen, a systematic supervision of studies was provided in the establishment of a board of advisers for the class, under the following regulation: —

> The Freshman class is placed under the special charge of a committee of the Faculty, each member of which acts as adviser to a certain portion of the class. Every Freshman is required to submit his choice of studies to his adviser at or before the beginning of the year, and his work is to be carried on under the supervision of that officer. He may consult his adviser upon any topic relating to his College life.

The committee appointed under this rule consists of thirteen members, each of whom has about twenty-five Freshmen under his charge. In making the apportionment, the committee availed itself of any natural foundation for sympathy between adviser and student that existed in any case, such as personal acquaintance with the student or with his family, or former connection with the school in which he was fitted for College, or familiarity with the part of the country from which he came; but in the majority of instances no criterion of this kind was available, and the choice of adviser was necessarily arbitrary. The apportionment was made, so far as the candidates admitted in June were concerned, during the summer vacation, and the two days preceding the opening of the year and a good many hours in the next few weeks were devoted by the members of the committee to conferences with the Freshmen severally assigned to them. The practical working of this system will be matter for future report; but the Faculty entered upon it not entirely as an experiment, having had now for some years a similar system, on a smaller scale, for the supervision of Special Students.

There remain to be noticed, as part of the restrictive measures added to the Regulations, certain amendments subjecting to closer restraint such students as have proved by persistent neglect of duty that they cannot be entrusted with the liberty which experience has shown to be wholesome for the great majority. Two of these amendments relate to Probation, which at the present time finds its almost exclusive application to this class of delinquents. Probation is in the nature of a final warning to a student and to his parents that he is not fulfilling the purposes of his residence at the University, and will not be permitted to remain if he persists in wasting his time and his opportunities. The amendments adopted had for their object, first, to close against such a student some of the most alluring distractions from systematic work; and, secondly, to put him under special supervision where that expedient shall seem likely to meet the needs of the case. The whole regulation on this subject is as follows, the amendments being indicated by italics: —

Probation indicates that a student is in serious danger of separation from College. When a student has been put on probation, whether for a stated period or not, he can be restored to full standing only by a special vote of the Faculty. While on probation he is not permitted to compete for any prizes or honors offered by the College, *nor to take part in any public theatrical or musical performance or athletic contest*, nor will he be recommended for a degree. *He may be required to put himself under the direction of a private tutor approved by the Dean, or to report daily to a College officer, or to do both.* If, after a reasonable period of trial, his conduct is still unsatisfactory, his probation will be closed, and his connection with the College will then cease.

A further amendment, under the head of 'Classification of Students,' provides that any student who has failed in his studies to such an extent, or done work of so low a grade, as to be disqualified from going on with his class, is thereby placed on probation, unless he satisfies the Faculty that his failure has not been due to neglect; and to the rule empowering instructors to exclude from their courses students who have wilfully neglected to perform the work in a systematic manner, a clause was added to the effect that a student so excluded may be required to place himself under the direction of a person approved by the Dean.

In addition to these enactments, aimed to secure regular and systematic work on the part of indifferent students, two important modifications were introduced, tending to encourage the more industrious and capable to do work of larger amount and better quality than is strictly required for the degree. Heretofore the rules regulating the amount of work to be taken by a student each year have required him to designate, not later than November 1, which of his studies he wished to be accepted as regular, that is, to be counted in satisfaction of the requirements for the degree, and which as *extra* studies; the number of regular studies being restricted to the number required, — four courses, or their equivalent.

In *extra* studies no account was taken of his attendance, but if he passed in the examinations, he received credit for the course at the end of the year, and his name appeared on the rank list of the course, if he passed with sufficient credit to merit that distinction. In the light thrown on the subject by the discussions of last year, it seemed to the Faculty, on the one hand, that if a student is to have credit on a course, he should undertake from the first the full responsibility of a regular member of the course, and that on the other hand, if he is willing to undertake that responsibility in more than four courses, there is no reason why he should be strictly limited to four. They therefore substituted for the sections relating to this subject the following:

5. A student whose record of work performed is complete at the beginning of any year may take elective studies in excess of the amount required by § 4,* to the extent of one course in his Freshman year, and of two courses in any subsequent year. In each of the studies pursued under this provision the student assumes the same responsibility, and is entitled to the same privileges, as if his work were limited to the required amount. He may, however, at any time withdraw from any study which he is pursuing in excess of the required amount, by giving written notice to the Secretary.

6. A student whose record is deficient at the beginning of any year is expected to pursue during that year such studies, in addition to those required by §§ 2 and 4*, as may be necessary to make up the

---

* §§ 2 and 4 define the prescribed studies and the amount of elective studies for each year of the College course.

deficiency; and these additional studies will be treated in all respects as part of his regular work. With the consent of the Dean, he may take additional studies beyond the amount necessary to make up his deficiency, under the conditions prescribed in § 5.

10. Any student who wishes, without assuming all the responsibilities of a regular study, to attend the instruction in any course, may do so on obtaining leave of the instructor; but no record will be kept of his attendance and he will receive no credit in the course.

Under these rules the student has the option in regard to any study which he takes beyond the required amount of four courses (within the limits indicated), whether he will assume full responsibility or not. In the latter case he is responsible solely to the instructor, and no record of his connection with the course is kept at the office; in the former case his regular work for the year consists of five or six courses instead of four. This does not necessarily imply that he may complete the work required for the degree in a shorter time, — that is still subject to the consent of the Faculty in each case; but the new rule opens and perhaps suggests a way to this end, which some students will doubtless seek to avail themselves of. But the same method has been provided heretofore by special arrangement in individual cases, and at each Commencement for some years past the names of a few Juniors have been added to the roll of the graduating class. Thus far, however, the desire to perform the work of the college course in three years appears to have been confined to a very small number of persons.

The other modification I have referred to as conducive to a better quality of work, relates to the regulations governing distinctions in the degree of bachelor of arts, and although the new rules on this subject were not put in shape till the beginning of the present year, they are in the same line with the improvements just described in the method of crediting students with work performed, and are included in the new edition of the Regulations; so that they may properly be recorded here. Under the old rule a degree with distinction might be secured either by general excellence of scholarship or by attaining honors or honorable mention in one or more departments of study. The attainment of Honors was followed in all cases by a degree *magna cum laude*, and the attainment of Highest Honors by a degree *summa cum laude*. But a degree with distinction on any other ground was subject to the general condition that the student had not received a grade below *C* on any study in his college course. If this condition had been complied with, he received a degree *cum laude* if he had attained Honorable Mention in any study, or if he had attained a grade above *C* on half of his college work (9.2 courses); if he had attained

Grade *A* on half of his college work, he received a degree *magna cum laude*; and Grade *A* on three quarters of his work (13.8 courses) gave him a degree *summa cum laude*.

This rule was provisionally adopted by the Faculty in 1886, when the system of grades was substituted for the percentage scale of marking, and its tentative character was recognized in the further provision, that the recommendation to degrees with distinction should be made upon the report of a standing committee, which should be generally governed by the foregoing rule, but would also examine all cases deserving of especial consideration. In administering the rule, which has been applied to two graduating classes, the Faculty has never strictly adhered to the general condition requiring a complete record of courses not lower than Grade *C*. As the studies that were to count for the degree were strictly defined near the beginning of each year, and no study taken in addition to these was allowed to count, the unfortunate student who received Grade *D* in his Freshman year, in a study which was rated as perhaps only one fifth of a course, would have been excluded, under a strict application of the rule, from any but an ordinary degree. The revised rules are framed with reference to the new regulations governing the choice of studies, under which a student can gain full credit in more than the required four courses every year; and they define, as the basis of distinction in the degree, positive attainment only. They prescribe as the condition of such distinction on any ground, — including that of honors, — the attainment of Grade *C* or a higher grade in *eighteen* courses. As the whole college course is rated as equivalent to 18.4 courses, it will be seen that a *D* on a small fractional course like Physics *A* or Chemistry *A* is no longer a bar to a degree with distinction; and if a student has fallen below *C* to the extent of a whole course or even more, he may still hope, unless this has occurred in his last year, to satisfy the requirements by taking additional studies later. With this general requirement, the terms for each of the three grades of distinction were defined as follows: for the degree *summa cum laude*, (1) Grade *A* in *fifteen* courses or (2) Highest Honors; for the degree *magna cum laude*, (1) Grade *A* in *nine* courses, or (2) Grade *A* or *B* in *fifteen* courses, or (3) Honors; for the degree *cum laude*, (1) Grade *A* or *B* in *nine* courses, or (2) Honorable Mention *twice*, — that is, either in two studies, or in one study if the student has passed with the required grade in twice as many courses in that study as are necessary for Honorable Mention.

This completed the legislation of the year, — a work of much time and thought, of patient inquiry and prolonged discussion. But this inquiry and discussion, covering the whole subject of college discipline and studies, has been instructive and fruitful. It gave to all who took part in it a clearer understanding of the merits as well as a juster estimate of the defects of the voluntary system which the Faculty has sought to develop during the past fifteen years; and the enactments to which it has led unquestionably mark a forward step, as important as any which has yet been taken, in this development. While the principle that lies at the root of the system, — the quickening principle of 'opportunity with responsibility,' — remains unshaken and is, we may hope, permanently established among us, the improved methods of control which experience has now embodied in our Regulations will provide a more certain and speedy check to abuse of their privileges on the part of idle or vicious students, without depriving the great majority of the wholesome liberty of regulating their own conduct and work.

The great amount of time and labor which the Faculty gave to the revision of the Regulations made it necessary to defer once more the question of the proper relation of the college course to the graduate department. The subject has, however, been taken up this year, and there is good reason to hope that a solution of the problem will be achieved.

CLEMENT LAWRENCE SMITH, *Dean*.

DECEMBER, 1889.

THE GRADUATE DEPARTMENT.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — I have the honor to submit the following report on the state of the Graduate Department during the academic year 1888–89: —

The number of students registered in the Department for any part of the year, omitting three who withdrew early to enter other departments of the University, was ninety-nine; of this number ten were classed as non-resident students, and eighty-nine as resident students. The latter category included all students actually in constant attendance at the University, and some students in Natural History engaged in regular courses of special study, who were necessarily absent from Cambridge for moderate portions of the year engaged in field-work connected with their studies.

The following table shows the amount and nature of the studies pursued by the students registered in the department, and the proportion among such students of graduates and non-graduates of this University: —

Resident students exclusively engaged in their studies for the entire academic year	50	
Resident students partially engaged in their studies, or engaged for a part of the year	39	89
Non-Resident students holding fellowships	9	
Non-Resident students not holding fellowships	1	10
Students (wholly or mainly) in Philology and Literature	31	
Students in Philosophy, History, Law, Political Science, Fine Arts, and Music	27	
Students in Mathematics, Physics, and Chemistry	23	
Students in Biology and Geology	18	99
Students continuing in this Department from 1887–88	48	
Students not registered in this Department in 1887–88	51	99
Harvard Bachelors of Arts or Science, not previously graduated elsewhere	55	
Harvard Bachelors of Arts, previously graduated elsewhere	8	
Students not holding the Harvard degree of A.B. or S.B.	36	99
Harvard Bachelors of Arts or Science, not holding the Harvard degree of A.M., Ph.D., or S.D.	43	
Students holding the Harvard degree of A.M., Ph.D., or S.D.	26	
Students holding no Harvard degree in Arts, Philosophy, or Science	30	99

The number of degrees given at the end of the year 1888–89 to graduate students, or upon recommendation by the Academic Council to professional students, is shown in the following table:—

A.B. to resident graduate students, on recommendation by the Faculty of the College	6	
A.M. to resident graduate students	18	
A.M. to professional students on special courses of study	5	
A.M. to professional students with a professional degree	11	
Ph.D. to resident graduate students	2	
Ph.D. to persons no longer registered as graduate students, a course of resident study having been completed in a former year	2	
S.D. to resident graduate students	2	46
A.M., Ph.D., or S.D. to Harvard Bachelors of Arts or Science	23	
A.M., Ph.D., or S.D. to persons not Harvard Bachelors of Arts or Science	23	46
A.B., A.M., Ph.D., or S.D. to graduate students, or on the ground of past studies in the Graduate Department	30	
A.M. to professional students	16	46

Of the four students who received the degree of *Doctor of Philosophy*, one was a student in Classical Philology, one in Metaphysics, one in Mathematics, and one in Geology. Of the two students who received the degree of *Doctor of Science*, one was a student in Botany, and one in Palaeontology.

The appointments to fellowships for the year 1888–89 are named in the report on this department for 1887–88. In accordance with those appointments, the following fellowships were held as follows: —

Parker Fellowship by J. W. Mack, studying Comparative Law at Munich.
" " " W. F. Osgood, studying Mathematics at Göttingen.
" " " T. W. Richards, studying Chemistry at Göttingen.
" " " A. G. Webster, studying Physics and Mathematics at Berlin.
Kirkland " " L. E. Gates, studying English and French Literature at Berlin.
Walker " " G. Santayana, studying Philosophy at Harvard University.
Tyndall Scholarship, by D. W. Shea, studying Physics at Harvard University.
Paine Fellowship by E. Cummings, studying Sociology at London.
Harris " " M. Bôcher, studying Mathematics at Göttingen.
Rogers " " E. N. Snyder, studying Comparative Philology at Berlin.
" " " F. L. Van Cleef, studying Greek and Archaeology at Bonn.

Messrs. Richards, Santayana, Snyder, and Webster withdrew from their fellowships at the close of the academic year; Messrs. Snyder and Webster having held their appointments for three years, Mr. Santayana for two years, and Mr. Richards having held a Morgan Fellowship for two years and a Parker Fellowship for one year. Messrs. Santayana and Richards are at present officers of instruction in this University.

The appointments and reappointments to travelling fellowships for 1889–90 are as follows: —

Parker Fellowship, J. W. Mack,* to continue the study of Comparative Law.
" " W. F. Osgood,* to continue the study of Mathematics.
" " M. Bôcher,† to continue the study of Mathematics.
" " L. L. Jackson, A.B. 1885, Ph.D. 1888, to continue the study of Chemistry.
Kirkland " L. E. Gates,* to continue the study of English and French Literature.
Walker " A. H. Lloyd, A.B. 1886, A.M. 1888, to continue the study of Philosophy.
Tyndall Scholarship, D. W. Shea,* to continue the study of Physics.
Paine Fellowship, E. Cummings,* to continue the study of Sociology.
Harris " C. F. A. Currier, A.B. 1887, A.M. 1888, to continue the study of History.
Rogers " F. L. Van Cleef,* to continue the study of Greek and Archaeology.
" " J. H. Gray, A.B. 1887, to continue the study of Political Science.

* Reappointed. † Transferred from the Harris Fellowship.

The number of candidates for these fellowships, besides the six candidates for reappointment, was twenty-seven. Of these, ten were students of Philology and Literature; twelve of Philosophy, History, and Political Science; one of Music; and four of the Mathematical and Natural Sciences. Thirteen were resident graduate students of the University; one was a professional student; four were members of the Senior class of Harvard College; five (including three graduate students) were instructors or assistants; seven were unconnected with the University during the academic year 1888-89, and one of these had never been connected with the University. Eighteen were Harvard Bachelors of Arts; and five were neither graduates nor undergraduates of Harvard College.

The *Morgan Fellowships*, which require residence at the University, were held by the following persons, during the year 1888–89: Messrs. W. H. Carruth, a student of Germanic Philology; C. W. Colby, a student of History; A. F. Foerste, a student of Geology: H. W. Haley, a student of Classical Philology; J. L. Markley, a student of Mathematics; and W. C. Sabine, a student of Physics. Messrs. Carruth, Markley, and Sabine withdrew from their fellowships at the close of the year; Mr. Carruth having held his appointment for one year, on a leave of absence from the University of Kansas, and Messrs. Markley and Sabine having held their fellowships for two years. The last two are at present officers of instruction in this University. Messrs. Colby, Foerste, and Haley were reappointed for 1889-90; and the following new appointments were made for that year: William White Deamer, A.B. (*University of California*) 1883, instructor in Latin at the University of California, to continue the study of Latin; * James Lee Love, A.B. (*University of North Carolina*) 1883, Associate Professor of Mathematics at the University of North Carolina, to continue the study of Mathematics; and John Matthews Manley, A.M. (*Furman University*) 1883, a resident graduate student of this University during the academic year 1888–89, to continue the study of English.

The number of candidates for Morgan Fellowships, besides candidates for reappointment, was forty-one. Of these, ten were students of Philology and Literature; sixteen of Philosophy, History, and Political Science; and fifteen of the Mathematical and Natural Sciences. Twelve were resident graduate or professional students of the University; four were members of the Senior class of the College; two were former students of the University; and twenty-three were persons who had never been connected with this University. Seven were also candidates for the class of fellowships which permit study abroad, and have, therefore, previously been enumerated.

---

* On account of a family bereavement Mr. Deamer is unable to hold his fellowship during the current year.

In April, 1889, the Corporation received a gift of $30,000 from Mr. William Story Bullard of Boston, for the foundation of three new fellowships in this department: the Henry Lee Memorial Fellowship of Political Economy, the Ozias Goodwin Memorial Fellowship of Constitutional or International Law, and the Henry Bromfield Rogers Memorial Fellowship of Ethics in its relation to Jurisprudence or to Sociology. These fellowships may be held by graduates of other colleges, as well as by graduates of this University. They may at the pleasure of the Council be assigned either to resident or non-resident students of this department.

Appointments to two of these fellowships were made immediately upon their foundation as follows: to the Henry Bromfield Rogers Memorial Fellowship of Ethics, James Gibson Hume, A.B. (*Toronto University*) 1887, A.M. (*Harvard*) 1889, to continue the study of Ethics at this University during 1889–90; to the Ozias Goodwin Memorial Fellowship of Constitutional or International Law, Wesley Paul, A.B. 1889, a student of Constitutional Law, to continue his studies at this University during the year 1889–90. Since his appointment Mr. Hume has been elected to a chair of Philosophy in the University of Toronto, but has been given leave of absence to continue his studies here. The Henry Lee Memorial Fellowship is not filled for the current year, its foundation coming so late that no sufficient notice of it could be given to acceptable candidates. Mr. Bullard's gift is one of the most generous and well-conceived ever made to this department. There is no more effective method of increasing the number of resident graduate students than by founding fellowships open alike to graduates of Harvard and of other colleges.

On the recommendation of the Faculty of the College twenty-four resident students of this department held Thayer, Townsend, and Shattuck Scholarships during the whole of the year 1888–89. Three other resident members of the department held similar scholarships for a part of the year. The number of candidates for appointment to these scholarships for 1889–90 was fifty-six, of whom thirty-three also applied for fellowships, and have previously been enumerated.

Nominations to these scholarships for 1889–90 were not made by the Faculty of the College until its last meeting in June. Out of twenty-seven persons then nominated, all of whom had desired to become resident members of this department in 1889–90, eight declined their appointments, their reasons as a rule being that action upon their applications for fellowships or scholarships had been taken so late, that in justice to themselves they had been forced to accept opportunities to continue teaching or studying elsewhere. At the present time seven of the Shattuck Scholarships are vacant. In view of these facts I respectfully suggest that appointments to fellowships and scholarships be made as early as possible in May.

In 1872–73, at the time of the organization of the Graduate Department in its present form, twenty resident students and three non-residents, in all twenty-three students, were admitted to registration. At the present moment, ninety-three resident, and fourteen non-resident students are registered in the department — a total of one hundred and seven. In seventeen years, therefore, the department has increased in numbers nearly fivefold. During this time there has been no corresponding development of its administrative machinery. Its executive functions have been performed almost entirely by the Secretary of the Academic Council, a professor in the College who serves in this additional capacity without relief from his labor as an instructor, and without additional compensation. The courses of instruction open to graduate students are planned, amended, or omitted at will by the Faculty of the College. The hours and days upon which such courses come are fixed by the same body, mainly to meet the requirements of undergraduate convenience. Officers of the College regulate the details of the department's organization, as for example the preparation of the lists of its students in the several courses, and the collection and tabulation of their examination grades. Priority is given in this work to the needs of the undergraduate department. No one exercises any supervision over graduate students; yet it is not infrequently the case that some of these persons, coming from colleges of low grade, are less mature, and more in need of advice, guidance, or restraint than the average members of the Senior or Junior class in College.

The Academic Council which exercises nominal control over this department, and recommends its degrees, now includes ninety-four members. Forty-eight of this number — more than half — omitted to attend any of the meetings of the Council held during 1888–89. Most of the business of the Council, so far as this department is concerned, is performed by committees, or minorities of committees. There is no member of the Council, except its Secretary, whose interest in the Graduate Department is not naturally and properly secondary to his interest in some other department.

The growth of the Graduate Department since the number of its students became considerable, while hindered by the defects in its organization, has on the whole been fairly constant. But it cannot be said that the resources of the department are utilized by anything approaching the number of advanced students which might be profiting by them. The existing organization can do little to stimulate an increase in the number of students. In spite of the zeal and untiring efforts of its Secretary — now absent in Europe — it cannot make effective appeals for endowment, and cannot long deal with its growing administrative burdens. It seems clear that the time has come for remodelling the department. It is worthy of a separate faculty composed of instructors to whom it will appeal as a primary and not as a secondary interest.

FRANK BOLLES,
Acting Secretary of the Academic Council.

NOVEMBER 22, 1889.

THE DIVINITY SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — As Dean of the Divinity Faculty, I beg to submit the following report for the academic year 1888–89: —

Thirty students were connected with the School during the year, as follows: —

Resident Graduates	7
Senior Class	2
Middle Class	4
Junior Class	13
Special Students	4

The Resident Graduates represented the following Theological Seminaries: —

Yale Theological Seminary	3
Meadville " "	2
Canton " "	1
Union "	1

Eight students were graduates of Harvard College. Sixteen other colleges were represented in the School.

Though the Senior class included but two students, three took the degree of B.D.; one of these having been enrolled as a Resident Graduate.

There were 179 choices by College students of courses which were originally announced for the degree of B.D., but which are now accepted, also, for the degree of A.B. This number includes some who took these studies as extras, as well as those who took them as part of their regular course.

A table of courses of instruction and of attendance is added. Besides the studies there named, several courses were announced which were not given last year, as no students elected them. Those thus omitted were two on the New Testament by Professor Thayer, and two in Aramaic by Professor Lyon. Both of these teachers announce more lectures than the average number given by the Professors in the School. This is done in order that the students may have a greater range of choice. Professor Toy and Professor Lyon gave also, in connection with the College, courses that are not accepted for the degree of B.D. and thus are not named in this report.

I spoke in my last report of the opportunity furnished for work supplementary to that of the class-room, by the "Seminaries," in which the students and the professors are brought into closer and more informal relations than are possible in the regular exercises of the School. To the two that were then mentioned — one in the department of Old Testament study, and one in that of the New Testament — there was the last year added one in the department of Theology.

It has for some years been the custom of the School that the first exercise of the year should be of a general nature and should be attended by all the professors and students, who thus have the opportunity of meeting one another. This opening lecture was the last year given by Professor Toy. In it he presented some of the results of his observations in Egypt the preceding winter. His subject was: The present condition of Mohammedanism in Egypt.

The new library proved itself even more useful than in the preceding year. During the latter part of the year it was open in the evening, as well as during the day, and was largely frequented. The use of this room has been extended to College students taking Divinity School courses, for which no books are reserved in Gore Hall; to clergymen resident in Cambridge, and to students in the Episcopal Theological School. This last provision was made in response to a petition from two or three members of that School that they might be allowed to make such use of the library.

The "Faculty-room," which serves also as the Dean's office, proves a great convenience. The Dean is there at a certain time every day; and the room being directly opposite to the reading-room, it it easy and natural for the students to have communication with him. The need is already felt, however, of a larger lecture-room, as it is very desirable that all the lectures which primarily belong to the Divinity School should be given in connection with it. The large attendance of College students renders this, in some cases, impossible. It would be well if there could be found a way to throw two of the lecture-rooms together when a larger hall is needed.

Instructors.	Subjects.	No. of hours per week.	Attendance.	
			Divinity Students.	College Students.
	OLD TESTAMENT.			
Prof. Lyon	Hebrew. — The text-books used were: Harper's Elements of Hebrew. — Harper's Hebrew Method and Manual. — The Hebrew Bible. — The Hebrew read included Genesis I.-VIII., Judges I.-IV., VI.-XII., and ten Psalms	3	3	8
Prof. Toy	Hebrew (Second Course). — Some Psalms were read, parts of Deuteronomy, Proverbs, and Jeremiah, and the whole of Ecclesiastes. In addition each member of the class read privately twenty pages of the Old Testament. There were frequent oral examinations and some short theses. The syntax was given by lectures, following the arrangement of Gesenius	2	3	
Prof. Lyon	History of Israel, political and social. — The period covered by the course extended from the beginning of Hebrew national life to the destruction of Jerusalem by Nebuchadnezzar in 586 B.C. Essays were written by members of the class	2	13	
Prof. Toy	History of the Religion of Israel. — A considerable portion of Schultz's Alttestamentliche Theologie; and there were lectures on the topics treated by him and on the relation between the Israelitish religious thought and that of other Semitic peoples and of the New Testament	2	4	
Prof. Toy	Old Testament Introduction. — The critical discussion of the Pentateuch was completed (Exodus); Leviticus, Numbers, and the constitution of the Psalter studied. There were references to works on the subject, and brief discussions of particular passages were prepared by the class	2	7	1

	NEW TESTAMENT.			
Prof. Thayer	New Testament Times: — the political, social, moral, and religious Condition of the World when Christ appeared	2*	7	
Prof. Thayer	Outline Lectures on Theological Encyclopaedia and Literature; the Characteristics of the New Testament Greek; the Septuagint; Textual Criticism; Hermeneutics; the Life of Christ. — Study of the Gospels. — Essays and Criticisms	2	10	
Prof. Thayer	New Testament Introduction: — the Origin, Contents, and History of the New Testament Writings, together with the Formation of the Canon	2	5	
Prof. Thayer	Outline lectures on the Life of Paul; Study of the Epistles; Essays and Criticisms	2	6	
	CHURCH HISTORY.			
Prof. Emerton	The Mediaeval Church, with especial reference to its effect upon public life and upon intellectual and social progress	2	3	12
Prof. Emerton	The Era of the Reformation in Europe from the rise of Italian Humanism to the close of the Council of Trent, 1350–1563	2	4	24
Prof. Emerton	History of Christian Doctrines	2	3	
Prof. Emerton	Advanced Study and Research. — Subject for 1888–89: Topics in Church History in connection with Courses 1 and 2			27
	COMPARATIVE RELIGION.			
Prof. Everett	Studies in the Comparative History of Religions, particularly the Vedic Religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese Religions	2	15	5
	ETHICS.			
Prof. Peabody	The Practical Ethics of Social Reform. — An examination of the problems of Charity, Temperance, Labor, Divorce, Prisons, the Indian question, etc. — Lectures, Essays, and the study of Institutions	2	8	88

* During the first half-year.

† During the second half-year.

Instructors.	Subjects.	No. of hours per week.	Attendance.	
			Divinity Students.	College Students.
	THEOLOGY.			
Prof. Peabody	The Philosophy of Religion. — An Introduction to the study of Theology	1	14	10
Prof. Everett	Systematic Theology begun: The Psychological basis of Religious Faith	1	17	4
Prof. Everett	Systematic Theology continued: The Content of Christian Faith. An elaborate essay on some Theological suject is expected from each student taking this course.	3	12	
	HOMILETICS AND PASTORAL CARE.			
Profs. Peabody and Mr. Hale	Homiletics I. — The Structure and Analysis of Sermons		7	
Profs. Everett and Peabody	Homoletics II. — Each student wrote six sermons during the year, three of which were preached before the students taking the course and criticised by students and teachers; the rest were criticised privately, in preparation for the public preaching named below		8	
Prof. Peabody	Pastoral Care and the Conduct of Public Worship			
	ELOCUTION.			
Mr. Kirby	Vocal Development; Vocal Expression; Criticisms on Delivery	2	12	
Mr. Kirby	Vocal Development; Action Development; Vocal and Action Expression; Bible and Hymn Reading; Sermon Delivery; Criticism on Delivery	2	7	
Mr. Kirby	Individual Instruction	5	19	
	GENERAL EXERCISES.			
	Preaching by students in the Chapel of the School, open to the public. Once a week. — Meetings for Debate. Once in two weeks. — Meetings for Religious Conference, conducted by students, alternating with the above. Once in two weeks. — Morning Prayers, conducted by professors and students.			

The School received the last year from Mr. Stephen Salisbury of Worcester a valuable gift of 65 Babylonian written tablets. Of such tablets there are now about 150 in the collection of the School, including six which belong to the University. It is greatly to be desired that these might serve as the nucleus of a Semitic Museum, in which Palestinian antiquities and other objects of interest should have a prominent place; or of a Biblical Museum, which should include objects of general Semitic interest. Gifts either to the University or to the Divinity School, which should make possible an enlargement of the present collection in the directions indicated, would do much service to the cause of Biblical and general learning.

A change was made during the summer vacation in the internal construction of Divinity Hall, by which a number of the rooms are made more desirable; the sleeping accommodations being more pleasant and healthful than before.

The Library which, October 1st, 1888, contained 20,815 volumes and 2393 pamphlets, has increased during the last year by the addition of 773 volumes and 805 pamphlets. From this number should be taken 60 volumes and 1 pamphlet, which were sold as duplicates. On the first of October, 1889, the Library contained 21,528 volumes and 3197 pamphlets. The addition to the Library during the year included the gift from Mr. John S. West of Tiverton of 186 volumes and 6 pamphlets; and that from Professor C. E. Norton of 122 volumes, which were referred to in my last report, besides other welcome donations.

The work of cataloguing was continued during the year. Though this involves an expenditure which the School at present can ill afford, it is a work of absolute necessity.

C. C. EVERETT, *Dean*.

NOVEMBER, 1889.

THE LAW SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — I beg to submit the following report upon the Law School for the academic year 1888–89: —

The table on p. 112 gives the courses of study and instruction during the year, the names of the instructors, the text-books used, the number of exercises per week in each course, and the number of students who offered themselves for examination in each course at the end of the year.

Instructors.	Studies and Text-books.	Exer-cises per week.	No. of students examined.
	FIRST YEAR.		
Prof. Keener	Contracts. Langdell's Cases on Contracts	3	85
Prof. Gray	Real Property. Gray's Cases on Property	2	75
Mr. Schofield	Torts. Ames's Cases on Torts	2	85
Prof. Ames	Civil Procedure at Common Law. Ames's Cases on Pleading	1	85
Mr. Chaplin	Criminal Law and Criminal Procedure. No text-book	1	89
	SECOND YEAR.		
Prof. Ames	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	30
Prof. Keener	Contracts. No text-book	2	57
Prof. Thayer	Evidence. No text-book	2	52
Prof. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases in Equity Pleading	2	36
Prof. Gray	Property. No text-book	2	62
Prof. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	49
Prof. Ames	Trusts. Ames's Cases on Trusts	2	63
	THIRD YEAR.		
Prof. Keener	Agency. No text-book	2	34
Prof. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases on Equity Jurisdiction	2	20
Prof. Ames	Partnership and Corporations. Ames's Cases on Partnership	2	32
Prof. Langdell	Suretyship and Mortgage. No text-book	2	21
Prof. Thayer	Constitutional Law. No text-book	2	10
Prof. Gray	U. S. Practice. No text-book	1	11
Prof. Gray	Wills and Administration. No text-book	1	11
Prof. Ames	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	14
Prof. Keener	Contracts. No text-book	2	1
Prof. Gray	Property. No text-book	2	1
Prof. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	20
Prof. Ames	Trusts. Ames's Cases on Trusts	2	3

The following table exhibits the attendance at the School during the last nineteen years: —

Year.	Whole no. of students.	No. present during the whole year.	No. present only part of the year.	Average number.
1870–71	165	107	58	136
1871–72	138	107	31	123
1872–73	117	109	8	113
1873–74	141	121	20	131
1874–75	144	130	14	137
1875–76	173	153	20	163
1876–77	199	168	31	184
1877–78	196	172	24	183
1878–79	169	137	32	154
1879–80	177	138	39	157
1880–81	161	136	25	149
1881–82	161	139	22	146
1882–83	138	120	18	129
1883–84	150	130	20	140
1884–85	156	139	17	148
1885–86	158	142	16	151
1886–87	188	160	28	174
1887–88	225	197	28	211
1888–89	225	198	27	212

The following table exhibits the School as divided into classes since the establishment of the three-years' course and the examination for admission: —

Year.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
First	72	63	78	57	61	59	58	75	55	75	89	74
Second	79	50	32	58	41	38	40	37	46	47	55	66
Third	.	.	21	14	25	20	22	17	17	24	33	27
Special Students .	31	47	46	32	34	21	30	28	40	42	46	58

In regard to the last table but one, it is to be observed that, although the three-years' course went into operation at the beginning of 1877–78, there was no third-year class until 1879–80. It is also to be observed that the second-year class of 1877–78 did not take the three-years' course, but was graduated at the end of the second year, that class having entered the School before the three-years' course went into operation.

The following table exhibits the results of the examinations for admission in each year since they were established: —

	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
Offered	16	15	18	25	19	12	12	17	17	14	33	20
Admitted	7	7	12	13	16	10	5	11	7	6	17	8

The following table exhibits the results of the examinations for a degree in each year since the establishment of the three-years' course: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877–78	66	51	15	66	47	19	.	.	.
1878–79	50	42	8	40	39	1	.	.	.
1879–80	73	69	4	28	26	2	22	18	4
1880–81	45	43	2	49	46	3	18	18	0
1881–82	49	44	5	38	37	1	36	33	3
1882–83	46	44	2	36	34	2	21	19	2
1883–84	51	41	10	35	31	4	26	25	1
1884–85	61	56	5	30	29	1	23	19	4
1885–86	54	48	6	41	38	3	18	18	0
1886–87	66	59	7	40	38	2	26	26	0
1887–88	80	70	10	43	34	9	33	32	1
1888–89	72	66	6	58	55	3	30	29	1

In regard to the foregoing table it is to be observed that it includes no Special Students, and hence that all the applicants included in it were either graduates of colleges or had passed the examination for admission. Of course this remark does not apply to the second-year class of 1877–78, and this accounts in part for the much greater number of failures in that class.

The following table exhibits the number of students who have received the honor degree in each year since it was established: —

1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
7	3	10	10	5	5	7	9	9	12

The following table exhibits the number of students who, since the establishment of the three-years' course, have been examined for a degree in the studies of any year without having been members of the School during that year: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877–78	5	2	3	.	.	.	.	.	.
1878–79	3	2	1	.	.	.	.	.	.
1879–80	6	4	2	1	1	0	5	4	1
1880–81	6	4	2	.	.	.	4	4	0
1881–82	2	1	1	.	.	.	10	8	2
1882–83	3	3	0	.	.	.	3	2	1
1883–84	7	6	1	.	.	.	3	3	0
1884–85	3	2	1	.	.	.	6	4	2
1885–86	4	3	1	.	.	.	2	2	0
1886–87	3	3	0	.	.	.	4	4	0
1887–88	5	3	2	1	0	1	2	2	0
1888–89	12	8	4	.	.	.	3	3	0

The following table exhibits the number of students who have entered the School in each year during the last nineteen years, and shows how many of them were graduates of colleges; and of the latter, how many were graduates of Harvard and how many of other colleges: —

Year.	Whole number of entries.	Graduates of colleges.	Harvard graduates.	Graduates of other colleges.	Non-graduates.
1870–71	105	60	19	41	45
1871–72	92	56	26	30	36
1872–73	87	47	22	25	40
1873–74	95	58	29	29	37
1874–75	102	55	40	15	47
1875–76	119	67	39	28	52
1876–77	128	77	47	30	51
1877–78	111	79	47	32	32
1878–79	102	62	38	24	40
1879–80	124	76	59	17	48
1880–81	91	60	41	19	31
1881–82	97	53	29	24	44
1882–83	84	56	33	23	28
1883–84	86	61	47	14	25
1884–85	101	79	56	23	22
1885–86	88	60	35	25	28
1886–87	113	80	46	34	33
1887–88	134	82	52	30	52
1888–89	111	77	50	27	34

The following table exhibits the average age at which students have entered the School in each year since 1873–74, that being the first year in which a record of ages was kept; also the age at which Harvard graduates, graduates of other colleges, and non-graduates respectively, have entered the School in each year since 1873–74; also the average age at which students have entered the School during the whole period since 1873–74; also the average age at which Harvard graduates, graduates of other colleges, and non-graduates respectively, have entered the School during the whole period since 1873–74: —

Year.	Of whole number of entries.	Of Harvard graduates.	Of graduates of other colleges.	Of non-graduates.
1873–74	23.34	23.58	23.76	22.83
1874–75	22.71	23.66	22.78	21.88
1875–76	22.98	22.35	23.28	23.28
1876–77	22.33	22.83	22.49	21.76
1877–78	23.34	23.25	23.83	22.97
1878–79	22.56	23.14	22.88	21.81
1878–80	23.20	23.46	22.77	23.02
1880–81	22.36	22.66	23.11	21.50
1881–82	22.68	23.06	23.73	21.85
1882–83	22.73	22.94	23.12	22.13
1883–84	22.64	23.17	22.86	21.53
1884–85	22.68	23.33	22.10	21.65
1885–86	22.73	23.21	22.84	22.03
1886–87	22.90	23.31	24.00	21.50
1887–88	22.86	23.33	23.42	22.07
1888–89	23.07	23.26	23.84	22.23
1873–74 to 1888–89	22.83	23.17	23.25	22.16

The average age of all students was greatest in the two years 1873–74 and 1877–78 ($23\frac{34}{100}$), and least in 1876–77 ($22\frac{33}{100}$); but the difference between these two extremes was only $1\frac{1}{100}$ years, and the average age for the whole period was almost precisely half way between the two extremes ($22\frac{83}{100}$). Moreover, it cannot be said that the average age has been either increasing or diminishing during the period covered by the table; for, if this period be divided into two equal parts, the average age for the first half of the period ($22\frac{85}{100}$) will be found to have been just $\frac{5}{100}$ more than in the second half ($22\frac{80}{100}$).

The average age of non-graduates was greatest in 1875–76 ($23\frac{28}{100}$), and least in the two years 1880–81 and 1886–87 ($21\frac{50}{100}$), the difference between the two extremes being $1\frac{78}{100}$ years; and the average

age for the whole period ($22\frac{16}{100}$) was considerably nearer to the lower than to the higher extreme. The average age of this class of students has been diminishing during the period covered by the table; for the average age during the first half of this period ($22\frac{40}{100}$) was almost half a year greater than during the second half ($21\frac{89}{100}$). The average age of non-graduates has been materially increased by men who take up law very late in life and very few of whom are graduates of colleges. The number of these men in the School has greatly diminished of late; and the reason probably is that the three-years' course and the examinations deter them from entering.

The average age of graduates of colleges other than Harvard was greatest in 1886–87 (24), and least in 1884–85 ($22\frac{10}{100}$), the difference between the two extremes being $1\frac{90}{100}$ years; and the average age for the whole period ($23\frac{25}{100}$) was considerably nearer to the higher than to the lower extreme. The average age of this class of students has increased slightly during the period covered by the table, the average age for the second half of that period being $\frac{14}{100}$ greater than for the first half.

The average age of Harvard graduates was greatest in 1874–75 ($23\frac{66}{100}$), and least in 1875–76 ($22\frac{35}{100}$), the difference between the two extremes being $1\frac{31}{100}$ years; and the average age for the whole period ($23\frac{17}{100}$) was considerably nearer to the higher than to the lower extreme. The average age of this class of students has also increased slightly during the period covered by the table, the average age during the second half of that period being greater by $\frac{11}{100}$ than during the first half.

Upon the whole, therefore, the age of graduates of colleges has increased slightly, while that of non-graduates has diminished, since 1873–74.

It must not be inferred, however, that the slight increase, within the last sixteen years, in the average age of Harvard graduates on entering the School correctly represents the increase in the average age of the same students when graduated by the College; for the average age of these students on entering the Law School depends upon another question besides that of their age when graduated by the College, namely, the average length of time which elapsed between the time of their being so graduated and the time of their entering the Law School; and, in respect to this last question, a great and important change has taken place since 1873–74, as will be seen from the following table: —

Year.	Whole number of Harvard graduates.	Number from last college class.	Number from preceding classe
1873–74	29	$10 = \frac{10}{29}$	$19 = \frac{19}{29}$
1874–75	40	$23 = \frac{23}{40}$	$17 = \frac{17}{40}$
1875–76	39	$27 = \frac{27}{39}$	$12 = \frac{12}{39}$
1876–77	47	$29 = \frac{29}{47}$	$18 = \frac{18}{47}$
1877–78	47	$32 = \frac{32}{47}$	$15 = \frac{15}{47}$
1878–79	38	$20 = \frac{20}{38}$	$18 = \frac{18}{38}$
1879–80	59	$37 = \frac{37}{59}$	$22 = \frac{22}{59}$
1880–81	41	$22 = \frac{22}{41}$	$19 = \frac{19}{41}$
1881–82	29	$14 = \frac{14}{29}$	$15 = \frac{15}{29}$
1882–83	33	$21 = \frac{21}{33}$	$12 = \frac{12}{33}$
1883–84	47	$32 = \frac{32}{47}$	$15 = \frac{15}{47}$
1884–85	56	$36 = \frac{36}{56}$	$20 = \frac{20}{56}$
1885–86	35	$25 = \frac{25}{35}$	$10 = \frac{10}{35}$
1886–87	46	$32 = \frac{32}{46}$	$14 = \frac{14}{46}$
1887–88	52	$42 = \frac{42}{52}$	$10 = \frac{10}{52}$
1888–89	50	$40 = \frac{40}{50}$	$10 = \frac{10}{50}$

During the first four years covered by this table (*i. e.*, the f years immediately preceding the establishment of the three-ye course), the total number of Harvard graduates who entered School was 155, while the number of those who entered in the yea their graduation from College was 89 ($\frac{89}{155} = .574$), and the num of those who entered a year or more after their graduation was ($\frac{66}{155} = .426$). During the next six years (*i. e.*, the first six ye of the three-years' course) the total number was 247, while number of those who entered in the year of their graduation 146 ($\frac{146}{247} = .591$), and the number of those who entered a year more or after their graduation was 101 ($\frac{101}{247} = .409$). Thus f therefore, it must be confessed that no material change is perceptib but during the last six years (1883–84 to 1888–89) the change been great, for the total number who entered during that period w 286, while the number of those who entered in the year of th graduation was 207 ($\frac{207}{286} = .724$), and the number of those w entered a year or more after their graduation was 79 ($\frac{79}{286} = .276$).

If we take single years we find that, in 1873–74, only a fraction o one third of the Harvard graduates came from the class of 1873, whi in 1887–88, a fraction over four-fifths came from the class of 188 in 1888–89 just four-fifths came from the class of 1888; and in t current year 42 have already entered from the class of 1889, — a nu ber which has never before been equalled in the *whole* of any ye except in 1887–88, when the number was the same; and yet the c lege class of 1889 was considerably smaller (212) than that of either 1887 (236) or 1888 (235). It is true that the proportion of those who came from the class of 1889 to the whole number of Harvard graduates who have entered during the current year ($\frac{42}{61} = .689$), is not so great as in either of the two preceding years, but the explanation of that is, — not that we have drawn a smaller proportion of the last college class, but that we have drawn a larger number (19) from preceding classes; and this accounts in part for the unprecedented number of Harvard graduates that have entered during the current year.

If we examine the table with reference to the number of Harvard graduates who have entered the School in single years from college classes of more than a year's standing, we find that there were 19 such in 1873–74 out of a total of 29; that this total number has been exceeded in every year since, except in 1881–82, when it was just the same, while the number from college classes of more than a year's standing has never been equalled since, except in 1879–80 (22 out of a total of 59), in 1880–81 (19 out of a total of 41), in 1884–85 (20 out of a total of 56), and in the current year (19 out of a total of 61).

The change exhibited by the last table is undoubtedly one of the fruits of the three-years' course, and of the increasing desire on the part of students, to take the full course. It is plain that a student who expects to spend seven years at this University cannot afford to let one or more years elapse between finishing his college course and beginning his course in the Law School.

Bearing in mind the fact that our students, on the average, are almost 23 years old ($22\frac{83}{100}$) when they enter the School, it is a matter for just surprise that so large a proportion of them remain in the School three full years. There could not be a better proof of the high aims and high ambitions with which they enter upon their chosen profession.

The whole number of students who entered the School during the year under review was one hundred and eleven (111), being less by twenty-three (23) than entered during the year 1887–88 (134), and less by two (2) than entered during the year 1886–87 (113); and yet the number of students whose names appeared in the Annual Catalogue (217) was greater by two (2) than in 1887–88 (215), and greater by thirty-seven (37) than in 1886–87 (180). The explanation of this, of course, is that the number of old students in the School was greater in 1888–89 than in 1887–88, and much greater than in 1886–87; and this again is chiefly explained by the fact that the year 1888–89 derived its old students from the unprecedented number of new students in 1887–88, and the comparatively large number in

1886–87, and the year 1887–88 derived the greater number of its old students from the comparatively large number of new students in 1886–87, while the year 1886–87 had only the years 1884–85 and 1885–86 from which to derive its old students, and the number of new students in the two last-named years was only one hundred and one (101) and eighty-eight (88) respectively. Doubtless, however, the large number of old students in the year 1888–89 was due in some degree to the constantly-increasing average length of time (of which there is now no doubt) that students remain in the School.

The falling-off in the number of new students in the year under review, in comparison with the year 1887–88, was chiefly in a single class of students, namely, those who were not graduates of colleges. The graduates of colleges were less by five (5) only (the Harvard graduates being less by two (2) only, and the graduates of other colleges being less by three (3) only), while the non-graduates were less by eighteen (18). The most probable explanation of this latter fact seems to be that the number of non-graduates in 1887–88 (52) was abnormally large. In the preceding five years the number of this class of students had averaged only twenty-seven and one-fifth (27⅕), in 1886–87 it was only thirty-three (33), and it dropped to thirty-four (34) in 1888–89. Still the experience of the now current year raises a doubt whether it was not the year 1888–89, rather than the year 1887–88, that was abnormal; for the non-graduates who have entered during the current year already number forty-four (44), being a larger number by two (2) than had entered at the corresponding date in 1887–88.

However this may be, there can be no doubt that the large increase in the number of new entries during the last four years represents, to a large extent at least, a genuine growth; for, during the four years immediately preceding 1886–87, the number of new entries averaged only eighty-nine and three-quarters (89¾) in each year, while during 1886–87, 1887–88, and 1888–89 it averaged one hundred and nineteen and one-third (119⅓), an increase of thirty (30), within a fraction; and during the current year the new entries already number one hundred and forty-one (141), being a larger number by seven (7) than entered during the whole of 1887-88, and larger by seventeen (17) than had entered at the corresponding date in 1887–88; and yet the new entries in 1887–88 exceeded by six (6) those of any other year since 1870–71 until the current year.

The increase in the number of new entries in the current year is chiefly in Harvard graduates and in non-graduates. The number of graduates of other colleges, though it exceeds by eight (8) those at the corresponding date in 1888–89, exceeds by four (4) only those at the corresponding date in 1887–88, and by three (3) only those at the corresponding date in 1886–87. The number of Harvard graduates on the other hand exceeds by seventeen (17) those at the corresponding date in 1886–87, by eleven (11) those at the corresponding date in 1887–88, and by thirteen (13) those at the corresponding date in 1888–89. Moreover, the number exceeds by two (2) the largest number (59) that ever before entered during the whole of any one year (1879–80). Nor was there anything in the size of the College class of 1889 to account for this large number of entries; for that class numbered only two hundred and twelve (212), while that of 1888 numbered two hundred and thirty-five (235), that of 1887 numbered two hundred and thirty-six (236), and that of 1886 numbered two hundred and twenty-seven (227). Still, the number of students which any given College class contributes to the Law School depends, not merely upon the size of the class, but also upon how large a proportion of the class adopts law as a profession, and very likely this proportion will be found to be unusually large in the Class of 1889.

The increase in the number of non-graduates who have entered the School during the current year has already been fully stated and sufficiently commented upon.

The School has had another element of growth during the last three years which is quite as marked as the increased number of new students, and even more important to the welfare of the School, namely, an increase in the average length of time that students remain in the School, and in the proportional number of those who remain during the entire course of three years. This is strikingly shown by the increasing size of the third-year class. The first seven third-year classes (namely, from 1879–80 to 1885–86, both inclusive) averaged in number only nineteen and three-sevenths ($19\frac{3}{7}$) each, while the three classes of 1886–87, 1887–88, and 1888–89 averaged twenty-eight (28) each; and this increase was in spite of the fact that only one of these three classes (namely, that of 1888–89) derived any advantage from the recent increase in the number of new entries, and the further fact that the third-year class of 1888–89 did not properly represent the number of third-year students in the School during that year, an unusually large proportion of the latter having failed to get into the third-year class. The third-year class for the current year was expected to be large, because its source of supply was the large number of new entries in 1887–88; but it exceeds in number all previous estimates. In my report upon the Law School, dated December 6, 1887, I made the following statement: "As the names on the Catalogue for the current year show a gain of thirty-five over the preceding year, while the new entries show a gain of only twenty, it follows that there are fifteen more old students now in the School than there were a yea ago. An increase in the second-year class was of course to be expected, on account of the increased number of new entries in the preceding year; but a portion of the gain is in the third-year class, that class numbering thirty (30), and being larger by six (6) than the third-year class of the preceding year. These figures are indeed small; but they assume importance from the relations in which they stand. The largest third-year class that we ever had before was that of 1881–82, which numbered twenty-five (25); but that class numbered in its first year seventy-eight (78), that being the year (1879-80) in which fifty-nine (59) Harvard graduates entered, and that being the largest first-year class that we ever had since the establishment of the three-years' course, until the current year. The next largest third-year class that we ever had before was that of last year which numbered twenty-four (24); but that class numbered in its first year seventy-five (75), that being the year (1884–85) in which fifty-six (56) Harvard graduates entered, and that being the second largest first-year class that we ever had from the establishment of the three-years' course up to that time. On the other hand the present third-year class, which numbers thirty (30), numbered only fifty-five (55) in its first year, and it happens, oddly enough, that it was the smallest first-year class that we have had since the three-years' course was established. That a class which numbered only fifty-five when it entered should now, in its third year, number thirty (30) may well be pronounced remarkable. If the present first-year class, which numbers eighty-nine (89), holds out proportionally well it will give us a third-year class of forty-eight (48)." In fact, the present third-year class numbers fifty (50), being larger by seventeen (17) than any previous third-year class, and just twice as large as the largest third-year class previous to 1887–88. Nor does this class fully represent the number of third-year students now in the School; for, while the third-year class has three (3) members who did not enter in 1887–88, there are now in the School eight (8) students who did enter in that year but are not in the third-year class; so that, of the students who entered in 1887–88, fifty-five are still in the School. Again, if we compare the size of the present third-year class with the size of the same class in its first and second years respectively, we find that it numbered eighty-nine (89) in its first year and sixty-six (66) in its second year, a falling-off of only twenty-three (23), while it numbers fifty (50) in its third year, a falling-off of only sixteen (16); and if we add to the third-year class those who were members of that class in its second year, and who, though no longer members of the class, are still in the School, we have fifty-four (54), a falling-off from the second year of only twelve (12). This is certainly a remarkable history when compared with that of any other class since the three-years' course was established, especially if we except the class which entered in 1885–86 and graduated in 1887–88.

The combined operation of the two elements of growth before referred to has been an increase of just one hundred (100) in the number of students in the School within the short period of four years, taking the Annual Catalogue as the standard, namely, from one hundred and fifty-four (154) in 1885–86 to two hundred and fifty-four (254) in the current year. Surely it is more than a coincidence that the beginning of this period of rapid growth is co-eval with the establishment of the Law School Association. Until the establishment of that association the School exhibited a very culpable want of interest in its *alumni* and former members; and one of the consequences of its establishment has been the very radical change which has since taken place in the School in the particular just referred to. In truth, it is only within the last three years that the School has awakened to the fact that its old students are its natural friends and supporters. Moreover, it was not until the fact was made clear to every one by the publication in June, 1888, of the Catalogue of the Officers and Students of the School from 1817 to 1887, that the School fully realized how distinguished a body of men her old students have become, and how much lustre they shed upon their *alma mater*. Indeed, that catalogue exhibited a roll of names of which any institution might well be proud. In proportion to its numbers, and the period of time which it covers, it is doubtful if any institution in the United States could produce its equal.

In conclusion, I beg to observe that this is the twentieth successive annual report upon the Law School which I have had the honor to submit to you as President of the University.

C. C. LANGDELL, *Dean*.

DECEMBER 9, 1889.

THE MEDICAL SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — In the absence of the Dean I have the honor to submit the following report upon the Medical School for the academic year 1888–89: —

The elective system, which has had its first year of trial, has worked well, and satisfaction has been expressed both by instructors and students. No further changes are recommended in it at present.

Attention has been directed during the year to the establishment of courses for graduates. The aim being to afford practitioners opportunities for instruction in short clinical and laboratory courses. Although the plan was not perfected until December, the number who have taken part gives good promise for the future.

Another new feature in the Medical School deserves attention. During July, August, and September of the past year, courses of study were provided to which, on payment of moderate fees, medical students and practitioners were admitted. These summer courses were chiefly clinical in character; the obstetric exercises were especially valuable, and were largely attended. The successful results of this first experiment in Summer teaching encourage a purpose to make the plan permanent.

In connection with increased facilities for special work the most important event of the year is the gift by Dr. Henry F. Sears of $35,000 for the erection of a laboratory for the advancement of the study of Pathology. The building is to contain laboratories for Bacteriology as well as for other branches of Pathology. It was an especial feature in the intent of the donor that practising physicians in and about Boston might feel directly encouraged to carry on investigations, even for a short time, at any convenient opportunity. This gift has the added value that it comes from a recent graduate of the School, who has devoted a large amount of his time since graduation to pathological research. His appreciation of the importance of the subject and his desire to increase and perfect the facilities offered by the School for its study, have resulted in this generous act.

The work in all departments has been thoroughly carried on, and there are very few cases in which the hours set down in the tabular view show all that is done by the instructors. It is greatly to be regretted that the resources of the School cannot allow a better recompense for the time so generously given. The amount and character of the instruction given is shown in Table I.

Facilities have been furnished by the School for special work not thus set forth, which may be summarized as follows: —

Physiology. — The Professor of Physiology and Dr. J. W. Warren have continued their studies of the knee-jerk, and examined especially the influence of sensory reënforcements. A portion of the results was reported by Dr. Warren at a meeting of the American Physiological Society, Dec. 31, 1888. An extended paper on these experiments and on the previous series concerning the reënforcing action of voluntary muscular movements will be published in an early number of the Journal of Physiology.

Dr. F. H. Hooper has continued his work on the larynx by studying the action of its intrinsic muscle.

Dr. Howard Ayers investigated the action of varying rates and intensity of nerve stimulation upon muscular movement.

Mr. E. A. Pease, a first-year medical student, made a short series of experiments with a case showing an interesting voluntary control of the heart. His results were printed in the Boston Medical and Surgical Journal, May 30, 1889.

Mr. C. E. Luce, of the Dental School, examined the movements of the lower jaw, making use of the photographic apparatus of laboratory. The method and results were published in the Boston Medical and Surgical Journal, July 4, 1889.

Chemistry. — Dr. Hills has continued his work on the postmortem imbibition of poisons, mentioned in the last report of the Dean.

At the request of Dr. J. J. Putnam an extended investigation into the frequency with which lead and arsenic are to be found in the urine has been carried on by Dr. C. P. Worcester.

Pathology. — The Professor of Pathological Anatomy has carried on a series of microscopical investigations with regard to the structural changes occurring in and near the pancreas in acute inflammations of this gland.

The results of this work were included in a paper on Acute Pancreatitis, which formed the Middleston Goldsmith Lecture for 1889, delivered before the New York Pathological Society, Feb. 16, 1889 (N. Y. Med. Rec., 1889, xxxv. 197. — Phila. Med. News, 1889, liv. 197. — Bost. Med. and Surg. Journal, 1889, cxx. 181).

Mr. S. E. Abbot began in the spring an inquiry into the structure and origin of Lymphomata, being enabled to undertake this work by the munificence of Miss Lucy Ellis.

Surgery. — Dr. F. S. Watson made a series of experiments upon resections and suture of the dog's bladder, published in the Boston Medical and Surgical Journal. The specimens in the Museum were also used in the preparation of his monograph on the Operative Treatment of the Hypertrophied Prostate.

Ophthalmology. — In addition to the regular work of this department, the Professor of Ophthalmology has devoted half an hour a week to giving personal assistance to individual students in the use of the ophthalmoscope.

Children's Diseases. — The work in this department has been much increased and entirely reorganized. The students of the second year now receive a course preliminary to the study of children's diseases,

TABLE I. — SHOWING THE AMOUNT AND CHARACTER OF INSTRUCTION.

COURSES OF INSTRUCTION FOR 1888–89.

Instructors.	Subjects.	Exercises per week.	No. of students examined.
	FIRST CLASS.		
Prof. Dwight	Descriptive Anatomy	Four.	90
Asst. Prof. M. H. Richardson	Practical and Applied Anatomy	Three, November till May.	
Drs. Mixter, Newell, & Conant	Practical Anatomy, with Exercises in Dissection	Five, January till May.	
Asst. Prof. C. S. Minot and Dr. Quincy	Laboratory Exercises in Histology	Two, till May.	
Asst. Prof. C. S. Minot	Embryology	Twenty Lectures.	
Prof. Bowditch	Systematic and Experimental Physiology	Four.	88
Dr. J. W. Warren	Laboratory Exercises in Experimental Physiology	Novemer till May.	
Asst. Prof. Hills	General and Analytical Chemistry	Two, with ten additional Exercises	71
Asst. Prof. Hills, Drs. Emerson and Harrington	Practical Exercises in the Laboratory for General Chemistry	Six.	
Dr. Harrington	Hygiene	Twelve Lectures and twelve Demonstrations.	
Dr. Harrington	Materia Medica with Practical Demonstrations	Two, second half-year.	92
	SECOND CLASS.		
Prof. Dwight	Topographical and Advanced Anatomy	One.	69
Asst. Prof. M. H. Richardson	Practical and Applied Anatomy	Five.	
Drs. Mixter, Newell, & Conant	Practical Anatomy, with Exercises in Dissection	Five, till May.	
Prof. Wood	Medical and Toxicological Chemistry	Two.	78
Prof. Wood, and Drs. Emerson and Harrington	Practical Exercises in Laboratory for Medical Chemistry	Six.	
Prof. Fitz	General Pathology and Pathological Anatomy	Two.	74
Prof. Fitz	Special Pathological Anatomy, with Demonstrations	Two.	

SECOND CLASS — Continued.

Drs. Whitney and Gannett	*Laboratory Exercises in Pathological Histology*	Two.	
Prof. Fitz and Dr. Gannett	Practical Instruction in Performing Autopsies	Throughout the year.	
Prof. Shattuck, Drs. Mason, Garland, and Vickery	Clinical Medicine, including one weekly conference	Four.	
Drs. Garland, Gannett, and Withington	Practical Instruction in Auscultation and Percussion	Six, first half-year.	
Dr. Cutler	Recitations in Theory and Practice	Two.	
Prof. Knight	Laryngoscopy	Six, first half-year.	
Dr. Burrell	The Application of Bandages and Apparatus	Six, October till January.	
Profs. Cheever and Warren	Clinical Surgery	Two.	
Prof. Porter	Clinical Surgery	Four.	
Asst. Prof. F. H. Williams	Therapeutics	Three.	79

THIRD CLASS.

Asst. Prof. F. H. Williams	Therapeutics	Three.	68
Prof. W. L. Richardson	Theory and Practice of Obstetrics	Two.	73
Dr. C. M. Green	Recitations in the Theory and Practice of Obstetrics	One.	
Dr. C. M. Green	Operative Obstetrics	Twelve practical Exercises.	
Drs. C. M. Green, Reynolds, and Townsend	Practical Instruction in Clinical Obstetrics	Throughout the year.	
Prof. Minot	Theory and Practice of Physic	Two.	72
Prof. Shattuck, Drs. Mason, Garland and Vickery	Clinical Medicine, including one weekly conference	Four.	69
Prof. Cheever	Surgery	One, October till January; Two, January till June.	67
Prof. Warren	Surgical Pathology	Two, October till January.	
Profs. Cheever, and Warren	Clinical Surgery	Two.	
Prof. Porter	Clinical Surgery	Four.	66

COURSES OF INSTRUCTION FOR 1888–89 — CONTINUED.

THIRD CLASS — CONTINUED.

Prof. Porter	Surgical Anatomy and Operative Surgery	Twice a week in March and April.	
Prof. Porter, Asst. Prof. M. H. Richardson, and Drs. Mixter, Newell, Conant, and Monks	Operative Surgery	Fifteen practical Exercises.	
Prof. Williams	Diseases of the Eye	Two, first half-year.	1
Prof. Williams	Clinical Ophthalmology	One, till January and after March.	
Prof. White	Diseases of the Skin	One.	5
Prof. White	Clinical Dermatology	One.	
Prof. Baker	Gynaecology	Two.	21
Prof. Baker	Clinical Gynaecology	Two, first half-year.	
Dr. Davenport	Clinical Gynaecology	Two, first half-year.	
Dr. Post	Practical Diagnosis and Treatment of Syphilis	One.	
Prof. J. O. Green	Practical Diagnosis and Treatment of Diseases of the Ear	One, January till April.	1
Prof. Blake	Anatomy, Physiology, and Diseases of the Ear	Two, for three months.	
Asst. Prof. Rotch	Practical Diagnosis and Treatment of Diseases of Children	One.	41
Dr. Putnam	Practical Diagnosis and Treatment of Diseases of the Nervous System	One.	1
Dr. Fisher	Mental Diseases	One, second half-year.	1
Asst. Prof. Draper	Legal Medicine, with Demonstrations	Twenty-four Exercises.	

FOURTH CLASS.

Prof. Shattuck	Clinical Medicine	One, for four months.	
Prof. Fitz	Clinical Medicine	One, for one month.	
Dr. Garland	Clinical Medicine	One.	
Dr. Gannett	Clinical Medicine.	One, for five month.	
Drs. Cutler and Vickery	Clinical Medicine.	One, for three months.	
Profs. Cheever, Porter, and Warren, and Drs. Gay and Watson	Clinical Surgery	One, for two months.	
Dr. Burrell	Clinical Surgery	Two, for four months.	
Prof. Porter and Dr. Monks	Operative Surgery	Practical Exercises.	1
Dr. Bradford	Orthopedic Surgery	Two, for two months.	
Prof. W. L. Richardson	Clinical Obstetrics	Two, for five months.	6
	Operative Obstetrics	Practical Exercises.	9
Prof. Williams	Clinical Ophthalmoscopy	Two, for six months.	3
Dr. Wadsworth	Ophthalmoscopy	One, for four months.	
Prof. White	Dermatology	One.	5
Prof. White	Clinical Dermatology	Three, for four months.	
Dr. Tilden	Clinical Dermatology	Two, for three months	
Asst. Prof. Baker and Dr. Davenport	Clinical Gynaecology	Two.	8
	Operative Gynaecology	Ten exercises.	
Drs. Strong, Elliot, and Doe	Clinical Gynaecology	One, for four months.	
Asst. Prof. Rotch	Diseases of Children	Two, for four months.	
Drs. Walton and Knapp	Diseases of the Nervous System	Three, for three months.	
Drs. Fisher and Cowles	Mental Diseases	Two, for four months	
Prof. Knight	Laryngology	Three, for three months.	3
Prof. Blake	Otology	Two, for three months.	1
Prof. J. O. Green	Otology	Two, for three months.	

COURSES OF INSTRUCTION FOR 1888-89 — CONTINUED.

	FOURTH CLASS. CONTINUED.		
Asst. Prof. Draper	Legal Medicine	One.	2
Dr. Harris	Legal Medicine	Demonstrations.	
Dr. Greenough	Syphilis	One.	
Dr. Homans	Ovarian Tumors	Six Lect.; Clin. Exer.	
Dr. Durgin	Hygiene	Sixteen Lectures.	
Drs. Cabot, Watson, and Tilden	Genito-urinary Surgery	One, for three months.	
Dr. Ernst	Bacteriology	One, for three months.	
Boston Cooking School	Cookery		

TABLE II. — SHOWING NUMBER OF TERMS SPENT AT THE SCHOOL BY GRADUATES.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Spent six terms .	39 86%	49 81%	79 91%	67 88%	57 96%	63 86%	72 91%	83 85%	77 88%	51 91%
Spent five terms .	1 2%	6 10%	2 2%	4 5%	0	3 4%	3 4%	4 4%	4 4%	2 3%
Spent four terms .	4 8%	4 6%	4 4%	4 5%	2 3%	4 5%	4 5%	1 1%	3 3%	2 3%
Spent three terms .	0	1 1%	0	1 1%	0	0	0	0	0	0
Spent two terms .	1 2%	0	1 1%	0	0	1 1%	0	1 1%	3 3%	1 1%
Total graduated .	45	60	86[1]	76[2]	59[3]	73[4]	79[5]	98[6]	87[7]	56[8]

[1] Includes nine students of the fourth class.
[2] Includes six students of the fourth class.
[3] Includes nine students of the fourth class.
[4] Includes three students of the fourth class.
[5] Includes nine students of the fourth class.
[6] Includes eleven students of the fourth class.
[7] Includes eleven students of the fourth class.
[8] Includes seven students of the fourth class.

TABLE III. — STATISTICS OF EXAMINATIONS.

EXAMINATIONS FOR ADMISSION.

			Physics.	Latin.	English.	Elective.	Rejected.
1889.	June	Offered . .	32	30	35	32	1
		Conditioned	5	9	5	5	
	Sept.	Offered . .	25	19	23	23	0
		Conditioned	4	6	8	0	

which is taken up in the third year. Dr. Buckingham has given much time and most admirable instruction in the contagious wards at the City Hospital.

Assistant Professor Rotch has made a study of the management of the breast milk, the material at the City Hospital and the chemical laboratory of the School having been used in this research. (City Hospital Reports, Fourth Series, 1889.)

Gynaecology. — Dr. F. H. Davenport has continued to give a great deal of extra time to the students. Dr. J. B. Swift has devoted one hour a week to students of the third class throughout the year, and Dr. H. C. Baldwin has taken great care in the preparation of cases for Dr. Strong's instruction. All of this work was done at the Free Hospital for Women.

The whole number of students in attendance

During the year was	300
During the first term	284
During the second term	284

Of these 134 had literary or scientific degrees.

There were 67 applicants for the degree of Doctor of Medicine in the three years' course, of whom 18 were rejected.

There were 9 applicants for the degree of Doctor of Medicine in the four years' course, of whom 3 were rejected; 1 of the students received the degree *cum laude.*

The fourth class was composed of 13 students.

The scholarships were awarded as follows: —

1st Barringer	Scholarship,	J. H. Huddleston .	3d	Class.
2d "	"	F. B. Mallory . .	3d	"
Faculty	"	Thos. B. Carpenter,	3d	"
"	"	H. R. Hitchcock .	2d	"
"	"	E. H. Nichols . .	3d	"
"	"	E. P. Stickney . .	2d	"
Foster Gratuity,		G. A. Craigin . .	4th	"
" "		A. C. Stanard . .	4th	"

The usual statistics of the School will be found in the following tables.

W. F. WHITNEY,
Secretary and Acting Dean.

TABLE IV. — JUNE EXAMINATIONS.

		First Class and Second Class.																Third Class.											
		Anatomy.		Physiology.		General Chemistry.		Medical Chemistry.		Materia Medica.		Path. Anatomy.		Adv. Anatomy.		Therapeutics.		Theory and Practice.		Clinical Medicine.		Surgery.		Clinical Surgery.		Therapeutics.		Obstetrics.	
			%		%		%		%		%		%		%		%		%		%		%		%		%		%
1885	Passed	69		75		51		62		125		63		59				52		59		58		62		33		52	
	Rejected	23	25	14	18	12	19	7	10	24	16	6	8	11	15			9	14	1	1	5	8	0	0	15	6	6	10
	Total	92		89		63		69		149		69		70				61		60		63		62		48		58	
1886	Passed	50		56		55		75		75		73		68				58		63		64		68		60		65	
	Rejected	27	35	19	25	10	15	11	13	15	16	9	11	20	29			8	12	1	1	7	10	0	0	7	10	6	8
	Total	77		75		65		86		90		82		88				66		64		71		68		67		71	
1887	Passed	66		63		49		69		66		67		67				69		74		79		79		73		78	
	Rejected	21	24	22	26	14	22	9	11	21	24	9	11	9	11			12	15	12	14	5	6	2	2	6	8	5	6
	Total	87		85		63		78		87		76		76				81		86		84		81		79		83	
1888	Passed	53		67		46		52		53		57		64				53		64		58		61		58		60	
	Rejected	7	11	10	13	9	16	9	14	15	22	4	6	3	4			7	11	2	3	5	8	0	0	5	8	6	9
	Total	60		77		55		61		68		61		67				60		66		63		61		63		66	
1889	Passed	67		65		55		59		61		58		53		61		59		61		61		62		53		58	
	Rejected	6	8	13	16	9	14	9	13	17	21	5	8	8	13	18	23	12	18	6	9	6	9	4	6	11	17	12	17
	Total	73		78		64		68		78		63		61		79		71		67		67		66		64		70	

THIRD CLASS. — ELECTIVES.

	Diseases of Children.		Dermatology.		Gynaecology.		Diseases of Nervous System.		Legal Medicine.		Mental Disease.		Ophthalmology.		Otology.	
		%		%		%		%		%		%		%		%

FOURTH CLASS.

		Ophthalmology.		Dermatology.		Gynaecology.		Clinical Obstetrics.		Diseases of Children.		Diseases of Nervous System.		Mental Diseases.		Legal Medicine.		Otology.		Laryngology.		Operative Obstetrics.		Operative Surgery.	
			%		%		%		%		%		%		%		%		%		%		%		%
1885	Passed	7		6		6				8		2		5		8		8		8				5	
	Rejected	0	0	0	0	1	16			0	0	4	66	1	2	0	0	0	0	0	0			3	37
	Total	7		6		7				8		6		6		8		8		8				8	
1886	Passed	10		11		10				10		10		10		8		11		11				12	
	Rejected	0	0	1	8	0	0			0	0	0	0	0	0	0	0	0	0	0	0			1	7
	Total	10		12		10				10		10		10		8		11		11				13	
1887	Passed	12		12		8				11		11		8		11		9		11				9	
	Rejected	4	25	0	0	5	38			0	0	1	8	6	42	0	0	1	10	0	0			2	18
	Total	16		12		13				11		12		14		11		10		11				11	
1888	Passed	2		3		3			*	0		0		3		2		2		3				0	
	Rejected	1	33	0	0	0	0			0	0	0	0	0	0	1	33	1	33	0	0			0	0
	Total	3		3		3				0		0		3		3		3		3				0	
1889	Passed	3		6		8		4		9		1		0		2		0		3		9		1	
	Rejected	0	0	0	0	0	0	2	33	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0
	Total	3		6		8		6		9		1		0		2		0		3		9		1	

THE DENTAL SCHOOL.

To the President of the University:

Sir, — As Dean of the Dental Faculty I have the honor to submit the following report upon the Dental School for the year 1888–89: —

The number of students was forty-one, divided as follows: First year six, second year fourteen, third year twenty-one.

The subjects of instruction have been the same as in previous years. Lectures have been given by the Medical Professors on the subjects of Anatomy, Physiology and General Chemistry in connection with their classes in the Medical School; and by the Professors and Instructors of the Dental School in Dental Therapeutics and Materia Medica, Oral Anatomy and Pathology, Operative Dentistry, Mechanical Dentistry, Surgical Pathology, Orthodontia or the Regulation of Teeth, Cleft Palate and other lesions peculiar to the Palate and their mechanical treatment. All of these lectures have been illustrated by subsequent clinical instruction in the Infirmaries connected with the School, or, during the lecture hour by models, diagrams, drawings, specimens, or by the microscope.

In the Operative department the number of students was twenty-four, including one Post-Graduate, four second-year and nineteen third-year students. The third-year men, who were the graduating class, all passed except one who failed to satisfy the Instructors as to his proficiency at the chair. In the Mechanical department all the candidates passed. The number of Graduates was seventeen, the largest class ever sent out from the School.

The instruction by lectures in the strictly Dental subjects was as follows: —

Instructors.	Subjects.	Number of Exercises.
Dr. Fillebrown	Operative Dentistry	34 lectures
Dr. Brackett	Dental Therapeutics	34 "
Dr. Chandler	Mechanical Dentistry	30 "
Dr. Briggs	Materia Medica	25 "
Dr. Stanton	Oral Pathology and Anatomy	33 "
Dr. Monks	Surgical Pathology	12 "
Dr. Wilson	Orthodontia	10 "
Dr. Grant	Cleft Palate, etc.	10 "

Besides their lectures the Professors of Operative and Mechanical Dentistry have devoted much time to clinical instruction in their respective departments.

The students are examined in all the subjects on which they receive instruction and no one is allowed to be graduated until he has passed satisfactorily in all. The subject of Materia Medica is included in Dental Therapeutics, Orthodontia in Operative Dentistry, and Cleft Palate in Mechanical Dentistry.

The students of the first year get no Dentistry, strictly speaking, but attend the lectures and exercises of the first year in the Medical School. The second and third year they spend in the Dental School, and obtain their practical instruction in its Infirmaries, under the supervision of Demonstrators and Clinical Instructors. Patients are obtained from that large class of persons who, being unable to pay first-class practitioners, willingly put themselves into the hands of students working under skilful supervision. The supply has never failed. In the Mechanical department the supply is not so constant nor so abundant; but the time is filled and manipulative dexterity obtained by practice-work with the baser metals and materials.

The Demonstrators, Dr. H. M. Clifford in the Operative, and Dr. A. H. Stoddard in the Mechanical department, have worked faithfully and well for the interests of the School, and proved themselves competent instructors in their several specialties.

On the eleventh of March last the twentieth anniversary of the first Commencement of the School was celebrated with appropriate exercises at Huntington Hall in the afternoon, and in the evening by a dinner at the Vendome. It was hoped to call attention to the value to the community of the School and its Hospitals, to make known its pressing needs, and attract to our help the aid of the charitable. The proceedings were published very fully in the papers of the day, and thus sent broadcast over the land. The pecuniary result, thus far, has been one munificent but anonymous gift of $6000.

At the end of the school year Dr. Horatio C. Meriam declined a renomination and Dr. F. E. Banfield was nominated as Clinical Instructor in Operative Dentistry. Drs. Grant and Wilson also resigned, after having zealously served the School for fifteen and eighteen years, respectively.

THOMAS H. CHANDLER, *Dean.*

THE LAWRENCE SCIENTIFIC SCHOOL.

To the President of the University:

Sir, — I respectfully submit the following report of the Lawrence Scientific School for the year 1888–89: —

The whole number of students connected with the School was thirty-six, of whom seven were regular students. One student received the degree of Bachelor of Science at Commencement.

The requirements for admission have been changed by substituting the requirement in English and American History for that in Latin; and the regulations have been modified so that a part of the entrance examinations may be passed the year before the student enters the School.

The prescribed courses of the School have been extended by adding a course in Electrical Engineering, and by dividing the course in Natural History into two courses, one in Geology and one in Biology. The course in Mathematics and Physics has been dropped.

The course in Electrical Engineering requires instruction in handling tools, for which the University has neither the outfit of tools nor an instructor; but the Corporation has made temporary provision for this instruction by arranging with the Cambridge Manual Training School to take a limited number of students and carry them through a course in manual training, which is adequate for the special needs of these students. The number who applied for permission to take this course, though the notice that it was to be given was short, and the conditions under which it is given are in some respects unfavorable, was much greater than could be accommodated. There can be no doubt that were the Scientific School well equipped with machinery and tools, and were the necessary instructors appointed, there would be many students who would avail themselves of the opportunity to learn the use of tools. Such equipment would be beneficial in another way; it would induce students who are not attracted to the gymnasium to take exercise which they need and at present do not take.

The School has for two years been gaining rapidly in numbers. In 1886 the number of students was 16; in 1887 it was 21; in 1888, 36; and this year, up to this date, 65. This gain may be attributed to several causes. It may be due in part to the action of the College in sending to the School students whose proposed studies are entirely scientific in character; to the omission of Latin from the entrance requirements; to the establishment of the course in Elecrical Engineering; or to the growing belief that the School is to continue to be a separate part of the University. Whatever be the cause of the increase, I think the fact that the School is growing, and that other schools of the same general character are thriving, is to be taken to indicate a public demand for prescribed courses leading to the degree of Bachelor of Science. I believe that this demand should be recognized, and that it should be met by multiplying the courses and equipping them with the apparatus demanded by modern methods of instruction. The connection of this School with Harvard College gives our students the benefits of the Physical and Chemical Laboratories, of the Museum of Comparative Zoölogy, and of the Herbarium and Botanical Garden; and they thus enjoy as good advantages in these directions as the students of other institutions. We have serious deficiencies, however, in other directions. We need a thoroughly equipped and well endowed workshop for manual training, and we shall not be able to make the course in Electrical Engineering what it ought to be until this need is supplied.

We ought also to provide new courses in Architecture and Mechanical Engineering. All the instruction which would be required in both these courses is now given in the College or the School except what would be given by the two professors in these subjects. The cost of establishing the courses would consequently be relatively very small.

I venture to refer to the recommendations in my former reports, that courses of instruction in Field Astronomy and in scientific French and German be established for the students in this School. The necessity for these courses is the same now as it was at the date of those reports.

W. S. CHAPLIN, *Dean.*

THE BUSSEY INSTITUTION.

To the President of the University:

Sir, — I respectfully submit the following report upon the Bussey Institution for the year 1888–89: —

Stated courses of instruction were given, as follows: In Agriculture by Mr. Motley; in Horticulture and Arboriculture by Mr. B. M. Watson, Jr.; in Botany by Mr. Kidder, and in Agricultural Chemistry by Professor Storer. Five students were in attendance.

Ten thousand and more specimens of flowers were sent from the Bussey greenhouses to Cambridge, to be used by the students in

Professor Goodale's classes, in accordance with an agreement between the departments of Botany and of Horticulture.

The Bussey farm was well cared for by Mr. Superintendent Northway, and considerable areas of land were laid down anew to grass. Horses and cattle were taken to board, as usual.

Under the supervision of Mr. Garfield, Superintendent of College Buildings, extensive repairs have been made upon the stone buildings of the Bussey Institution. The tin-work and slating of the roofs were renovated; the external wood-work — including doors and window-sashes — was painted; imperfect joints of the stone-work were pointed, and the chimnies were rebuilt from the roof up. Some small repairs were put upon the greenhouses also.

An anonymous gift of one hundred dollars for procuring a new greenhouse boiler was received through Mr. B. M. Watson, Jr.; also gifts of a mowing-machine from Mr. Patrick McMorrow of Forest Hills street, Jamaica Plain, of a horse from Dr. D. H. Storer of Boston, of agricultural newspapers from Dr. D. D. Slade of Chestnut Hill, and of agricultural journals from Mr. Watson.

F. H. STORER, *Dean*.

THE VETERINARY SCHOOL.

To the President of the University:

Sir, — I beg to submit herewith the seventh annual report of the School of Veterinary Medicine: —

The three students composing the third class presented themselves for the final examinations, in which all were successful. There were five graduates; two from the third class, one from the second, and two from among the unsuccessful candidates of the previous year. The remaining successful member of the third class, being of less than the required age, did not graduate; he has become a member of the Sophomore class in the College.

Of the nine members of the second class one graduated, five advanced, one remained in the class, one completed his three years of attendance at the School, and one became a student at the Medical School.

Of the nine members of the first class one advanced into the third, and one into the second class; two completed their three years of attendance at the School, one closed his connection here, and four remain in the class.

There were eight successful candidates for admission to the School. Thus there are six students in the third class, two in the second, and twelve in the first; making a total attendance of twenty, the same number of regular students as last year.

The instruction in Operative Veterinary Surgery, which was provisionally placed in the hands of Dr. Lee, the Instructor in Anatomy, and which has been given by him with great acceptance, has now been assigned to Dr. Beckett, this instruction being directly in line with his experience and duties as Operating Surgeon to the Hospital.

The Veterinary Hospital. — For the twelve months ending October 31, 1889, 2500 patients have been treated at the Hospital. Of these, 1473 were "out-door" clinics; 4 were sent to the farm at the Bussey Institution; and 1023 were "in-door" patients at the Village Street buildings. Of these last 630 were horses, 376 dogs, 5 mules, 1 cow, 10 cats, and 1 goat. In addition to these 1593 horses were shod during the year.

These figures show a very considerable increase in the "in-door" patients, as well as a slight one in the total number of cases for the year. This constant improvement, which by a steady and healthful growth has brought the total of animals offered for treatment up from 1393 in 1884–85 to 2500 for the present year, warrants, I think, the assumption that one, at least, of the great aims of this department has been successfully accomplished; that is, that in connection with it there is maintained a Hospital at which a large number of animals are successfully treated each year; thus giving to its students an opportunity for observation and practical instruction which is not exceeded, probably, by any similar institution either here or in Great Britain.

In accordance with a suggestion made in my last annual report the Hospital staff has been enlarged by the addition to it of Dr. Daniel Emerson, who was appointed to the position of Resident Surgeon, and reported for duty on the 10th of June. So far as can be judged, after so short a trial, this enlargement of the staff is an important improvement.

Finances. — The deficit for the year is $123.92, which is an improvement of $1452.20 over last year's experience. The expenditures, in all divisions, have been $923.88, and the receipts from all sources $2376.08, greater than for 1887–88.

When it is considered that the University is maintaining a school of the highest grade, that for its purposes new and appropriate buildings have been erected, upon which an annual rental of 6% of the entire cost is paid, and that this and all charges of every description, including salaries, taxes, etc., are expected to be paid from the earnings of the department alone: when it is remembered that similar institutions wherever else existing are either partially or entirely supported by a national law which regulates the curricula and equalize the examinations in the different schools over the entire country, o by direct government grant, or by private endowment; that here with no endowment — i. e. with no capital in hand — with the constantly present apprehension of an annual deficit — and all that tha means, — and the consequent severely limited possibilities of administrative action, it seems to me that the experiences of the last yea are very gratifying, and that until the conditions change in some on of the enumerated particulars we must be fully satisfied with a slo growth, and not be alarmed or disheartened by an occasional check

CHARLES P. LYMAN, *Dean.*

THE LIBRARY.

To the President of the University:

Sir, — Three numbers of the *Bulletin of Harvard University* hav been issued under the immediate charge of the Librarian during th past year. Of the *Bibliographical Contributions*, also issued separately by the Library, three have been published, namely: No. 22 *Calendar of the Sparks MSS.*, by the Librarian; No. 32, *List of Mathematical Theses in the College*, 1782–1839, by Henry C. Badger; anc No. 33, a *Fifth List of Publications of Harvard College and its Officers*, 1887–88, by W. H. Tillinghast, Assitant Librarian.

The accessions to the University Library for the year, and th present extent of the various departments, are as follows: —

Principal Departments.	Volumes added.	Present extent in	
		Volumes.	Pamphlets.
Gore Hall (College Library) .	9,045	268,551	256,737
Law School	841	24,498	3,191
Scientific School	102	2,819	800
Divinity School	773	21,528	3,197
Medical School	289	1,839	. . .
Museum of Zoölogy	516	20,168	10,189
Astronomical Observatory . .	484	6,456	6,125
Botanic Garden	106	5,392	3,374
Bussey Institution	50	3,100	1,010
Peabody Museum	47	1,068	1,155
Totals	12,253	355,419	285,778

If to this total of 355,419 volumes be added the 3168 volumes of the permanent collections in the laboratories and class rooms, we have a grand total of 358,587 volumes for the University Library.

The Whitney Library of Geology, a component part of the collection in the Museum of Zoölogy, is not yet included in the count of the Museum Library; while on the other hand no deduction has been made in the general library for volumes parted with on exchange account.

The present extent of the laboratory and class-room libraries is as follows:

	Permanent.	On Deposit.	Totals.
Laboratories.			
Chemical	557	. .	557
Botanical	334	. .	334
Physical	. .	216	216
Class-Rooms.			
Greek	313	154	467
Latin	40	173	213
United States History	694	. .	694
Political Economy	476	. .	476
Mathematics	178	133	311
French	529	. .	529
English	25	. .	25
Sanskrit	22	. .	22
Totals	3,168	676	3,844

An assistant is sent from the Central Library every week to examine the shelves of these libraries by the shelf-lists, and the titles of missing books are reported at once to the officer of instruction in immediate charge of the library where such loss or misplacement has been discovered. Temporary loans of books from Gore Hall are made to these libraries to facilitate the instruction of the several departments. Six of these libraries were open evenings, and thus additional hours beyond the daylight were available to the students for using books which belong in Gore Hall.

Of the accessions to the Gore Hall Collections there were added by gift 2961 volumes and 8734 pamphlets; and the accessions also include 638 volumes of bound serials (received in parts), and 504 volumes made by binding pamphlets.

The accessions of recent years to the University Library (excluding the laboratory and class-room libraries) have been reported as follows: —

In 1879	10,389 vols.	In 1885	14,558 vols.
“ 1880	7,247 “	“ 1886	9,191 “
“ 1881	9,804 “	“ 1887	11,924 “
“ 1882	9,192 “	“ 1888	16,468 “
“ 1883	9,818 “	“ 1889	12,253 “
“ 1884	12,360 ‘		

The following tables show the use of books at Gore Hall in 1888–89 as compared with previous years: —

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
1. Books lent out . .	48,231	48,655	52,322	60,195	62,861	65,639	68,892
2. Used in the building	8,654	9,047	9,433	8,816	12,041	15,267	14,299
3. Overnight use of reserved books .	12,678	11,399	13,791	18,505	20,052	20,360	21,802
Total (excluding No. 3, which is incl. in No. 1)	56,885	57,702	61,755	69,011	74,902	80,906	84,191
Officers of instruction reserving books .	44	48	48	56	56	. .	. .
No. of books reserved	4,316	4,782	5,230	5,840	6,280	6,549	5,848

It is no longer practicable to indicate the number of instructors reserving books, since the classes in several courses are now divided among more than one instructor, and we have no means of knowing whether they all make use of the system.

The extent of the number of books reserved — of whose hall-use no record is kept — has a tendency to decrease the number of volumes used in the building, of whose use record is made. In addition to the books reserved by instructors, now amounting to 5848 volumes, there are in the reading-room 1854 volumes carefully selected for students' reading by the instructors in their several departments. Of these, 1337 are English, 354 French, 119 German, and 44 Italian. The use of these books is not governed by the restrictions applied to reserved books, but the books may be taken out as other books are.

In the Delivery Room are 5286 volumes, all of which are accessible to students. Of these, 3047 volumes are bound periodicals which may be taken out as seven-day books, and 2239 volumes are for reference only, comprising dictionaries, encyclopædias, and the most useful books of reference in all departments.

Of the 1531 books sent to the "Annex" during the year, 299 were from the class of "reserved books," while the proportion last year was 301 out of 1545. The number of separate students of the

"Annex" who borrowed books during the past year was 72 — a large increase over the number during recent years.

SUNDAY USE.

	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
Sundays open	36	36	36	37	37	37	37	37
Persons using	2,067	2,268	2,448	2,631	2,842	2,880	2,894	3,024
Average . .	57	63	68	71	76	77	78	81
Highest no. .	91	92	95	105	108	118	106	108

It will also be seen by the following tables that the use of "Admission-Cards," by which students have access to special classes of the books for investigation at the shelves, is steadily gaining in favor, judging, not from the number issued, but from the increased frequency of using them: —

ADMISSION—CARDS.

	1881–82.	1882–83.	1883–34.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
History . . .	49	46	45	52	68	74	71	81
Science . . .	26	16	18	12	14	12	14	9
Art (incl. Music)	22	14	12	14	16	13	16	24
Literature . .	36	42	37	42	49	62	54	27
Classics . . .	49	36	42	53	52	47	42	24
Philosophy . .	6	5	6	8	9	8	9	16
Theology . .	4	3	8	9	12	15	11	6
Polit. Economy	8	5	8	12	44	64	49	25
Total students	200	167	176	202	264	295	266	212
Times of use .	2,542	3,340	3,520	4,020	5,820	7,375	7,980	8,390

The College teachers who have students under instruction in the methods of research are still given such facilities as the Library building affords for the accommodation of their classes; but the advantages of the building are in this direction far from what they should be, and some checks upon this kind of research among the students are necessarily imposed.

STUDENTS' USE OF THE LIBRARY.

STUDENTS OF	1884–85.		1885–86.		1886–87.		1887–88.		1888–89.	
	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.
Divinity . . .	26	26	25	25	20	20	16	16	26	26
Law	153	122	154	136	180	108	215	175	217	138
Scientific . .	28	21	22	18	14	10	20	18	35	21
Resident Grad.	70	52	64	62	56	54	83	76	85	74
Senior Class .	191	170	232	214	239	231	237	234	214	206
Junior Class .	234	216	236	228	238	215	214	209	252	249
Sophom. Class	256	220	232	216	224	206	281	234	264	238
Freshm. Class	255	205	258	201	280	195	295	229	309	215
Totals . .	1213	1032	1231	1100	1251	1039	1331	1191	1402	1167

The percentage of users among the undergraduates has risen during recent years, as follows: —

	1879–80.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
For Seniors	88	90	90	92	96	99	97
For Juniors	83	88	98	96	90	98	99
For Sophomores	88	85	86	93	92	94	90
For Freshmen	65	80	80	78	69	77	69

Fourteen years ago* only 57% of all the College students used the Library. Of the Seniors it will be observed that less than 4% failed to use the Library. Of the 1039 undergraduates only 131 failed to borrow books, and some of these probably used the reserved books in the Reading Room. The libraries of the class-rooms and laboratories, as well as those of the students' clubs, doubtless provide reading, special as well as general, for a considerable number of undergraduates. These additional resources very likely account for the slight falling off of users during the past year; though, as is shown in a previous table, there has been the customary increase in issues of books.

These statements do not cover the use of "reserved books." Nor is there any record of the use made of the 464 periodicals, current numbers of which are on file in the Reading Room.

The number of persons registered and entitled to take books away from the Library building is as follows: —

---

* See table in previous reports.

Students	1,368
Instructors	133
Others	228
Total	1,729

Mr. Frank Carney, who under Mr. Tillinghast has charge of the shelves, reports that 4029 volumes have been permanently placed in the new stack since the last report, making 110,294 so placed out of the volumes constituting the Gore Hall collection. Until the original Gore Hall is reconstructed, there can be no further progress made in reclassifying the Library.

Mr. Carney verified the shelf-lists of the classifications in the stack, between the 1st and the 29th of July, showing about 140,000 volumes. The number of volumes which failed to be accounted for was 34. Of those reported missing in previous years 19 were found in their places. Of books reported missing since 1883 there are still 215 unaccounted for; 104 having disappeared from the reserved books, and 111 from the stack. Of these 34 unaccounted-for volumes of the year just closed about one half have disappeared from the books of reference, reserved books, and other collections exposed to the handling of all frequenters of the Library, the other half having disappeared from the shelves to which only the staff of the Library, officers of the College, and a limited number of other persons have access.

Mr. Lane, Assistant Librarian, furnishes the following figures about the work of the Catalogue department: The total number of titles catalogued for the year (1888–89) has been 7369, of which 7184 were of books recently received, and 167 of "old work," i. e. books received before 1860, when the present card catalogue was begun. This "old work" is now so nearly done that the entries to be made this year and hereafter concern only such incidental portions of these arrears as the progress of the general cataloguing work brings to light. Some years ago, in order to render available books not much in demand and which were still uncatalogued, a considerable amount of "short-work" cataloguing was done as a temporary expedient. It is intended to perfect this catologuing gradually and about 11,000 such titles remain to be recatalogued.

In addition to these 7369 titles which have passed into the Gore Hall Catalogue there have been 1721 titles catalogued of books received for the departmental libraries. There are now 21 of these subsidiary libraries for which books are catalogued in Gore Hall.

The present year's work may be compared with other years as follows: —

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
1. Gore Hall cards prepared	17,015	21,524	30,968	32,580	29,229	23,696	21,256
2. Titles catalogued for departments . . .	. . .	. . .	. . .	957*	1,021	1,291	1,721
3. Volumes received in Gore Hall	8,441	9,879	12,442	6,730	9,108	10,885	9,045
4. Approximate hours' work of the assistants of the catalogue department.	16,908	24,241	22,231	23,020	22,118	20,696	18,293

About 2100 volumes were on the shelves of the catalogue-department on Oct. 1 waiting to be catalogued, but all except 93 of these had been received since January 1. This is about as close work as it is practicable to do. In addition to these arrears of work Professor Lanman has brought from Europe a considerable collection of Sanskrit books and manuscripts; and Mr. Fitz-Edward Hall, of the Class of 1846, long resident in India and now in England, has sent to the Library as a gift a collection of perhaps 500 Sanskrit manuscripts. All of these are also still uncatalogued, but arrangements have been made by which work on them will be at once begun under Mr. Lanman's supervision. There is also a collection of Arabic books — brought home last year by Professor Toy — for which a similar plan needs to be arranged.

The printing of the Index to the subject-catalogue has proceeded slowly, 96 pages being now in type, which brings the list into N.

A full year's experience with printed cards has now been had. Last year the cost of them (for nine months) was $172.40; for the year just closed the charge has been $323.38. The amount of wages for hours' work paid in the Catalogue department during recent years has been: for 1885–86, $5440.37; for 1886–87, $5910.50; for 1887–88, $5525.56; for 1888–89, $5048.26. If to the last amount there be added the cost of the printed cards it will be seen that the total, $5371.94, is below the payments for wages of the previous years. It would seem also, from the the proportion remaining the same between the total expense of cataloguing and the work done, that there is enough saving in time to meet the cost of such printing. Mr. Lane reports: "More than half the titles catalogued have been in printed cards. The proportion has been raised by the 583 titles of the Treat collection," mentioned in last year's report.

---

* In previous years the record was by volumes, not by titles.

Early in the year Mr. Tanaka, an assistant librarian of the Imperial Library at Tokio, came with credentials from the Japanese government, in accordance with a request which had been made earlier, that a member of the staff of that library should be allowed the opportunity of acquiring experience in library work according to American methods. Under my direction Mr. Tanaka not only became familiar with every department of our own library work, but I introduced him to other libraries, where different methods and purposes prevailed, so that he acquired a full comparative knowledge of library administration in this country. His intelligence and assiduity commanded our admiration and respect, and in due time he became able to be of use in our catalogue work, which he pursued for awhile to increase his own experience. After giving considerable time to the methods in use in the Boston Public Library and in the Boston Athenæum, he visited different library centres in this country likely to afford him new insights, by reason of differing conditions of work, and has now gone to Europe, with introductions which I gave him to the principal European libraries.

Mr. Tillinghast, Assistant Librarian, and head of the Ordering department, has made a very full report upon the work and condition of his share of the Library service. I can make but a brief abstract of some of the more important points of his statement.

At the end of the Library year the estimated cost of orders then out (including "continuations," reckoned at say $6078) was about $13,502, and it was expected that about $8234 of these would come in, to be paid for during the coming year. We carry forward a balance in our favor on the Treasurer's books of about $2500, which may increase our available income for the next year to about $18,000, which amount is already pledged for say $11,084 (that is, orders out $8234, periodicals and binding $2400, freight $450), leaving a free balance of say not far from $7000,

The following table contains a summary of our financial condition during six years: —

	1863–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.
Income for books *	$22,691	$17,570	$16,245	$19,341	$20,407	$19,871
Spent	18,991	16,533	13,923	14,549	16,062	17,347
Balance	3,700	1,037	2,321	4,791	4,345	2,534
Appropriation . .	23,670	17,500	none.	17,500	19,000	20,050
Unpledged balance	11,513	6,396	7,180	12,032	12,080	11,238

---

* The items of income include unexpended balances of the previous year.

During the year 1887–88 we sent out orders the estimated cost of which was about $6805; during the past year they have amounted to $7500. This amount was divided among agents as follows: Domestic, $1200, against $1300 last year; English, $2500, against $2150; French, $910, against $1035; German, $2450, against $1950; Italian, $325, against $112; Scandinavian, $106, against $56.

The following table shows the proportions of certain items to income and appropriation: —

Year.	Proportion of appropriations to income.	Proportion of liabilities to appropriations.	Proportion of money pledged for annual continuations, etc., to appropriations.
1880–81	.89	. .	. .
1881–82	.81	.76	.44
1882–83	.91	.70	.29
1883–84	1.04	.87	.47
1884–85	.99	1.01	.63
1885–86	none made	.87 (to income)	.55 (to income)
1886–87	.88	.82	.41
1887–88	.93	.78	.42
1888–89	1.01	.81	.43

The following table indicates for five years past the extent and variety of orders dealt with by the Ordering department, and shows that more than 14,000 slips are arranged and kept in mind in the daily work of those in charge of this department: —

Order slips on hand October 1.	1885.	1886.	1887.	1888.	1889.
Book orders out	2,268	1,487	1,539	2,112	2,875
Continuation orders out	1,536	1,637	1,819	1,951	2,163
Total active orders .	3,804	3,124	3,358	4,063	5,038
Cancelled orders. . . .	5,188	6,675	6,268	7,625	8,400
Deferred orders	1,416	531	488	541	533
Slips for reference use .	. . .	110	136	124	130
Slips of little value . . .	76	76	76	76	76
Grand total	10,484	10,516	10,326	12,429	14,177

The estimated cost of continuations, which is a fixed liability for our book funds, — though only about one-half of the charges is likely to be actually incurred each year, owing to the irregularity of such serials, — has been growing rapidly of late years. It has risen from a liability of $2008 in 1880–81 to $5770 for last year, and $6079 for the year just closed, an increase of 300% in eight years. In 1880–81 this estimated charge was less than a quarter of the total estimated charge of keeping up the growth of the Library; now it is much more than a third. During the last six years the titles of this description on our orders have increased one half. They include books issued in parts or published in a series, as well as transactions and other serials; but periodicals, ordinarily so classed, are not included. The increase is in good part due to the increasing tendency of the the Germans to issue books and dissertations in parts. There is in some cases no very decided intention ever to issue a second part, the initial issue being intended to guard by an implied promise of a sequel against imputations of insufficiency of treatment, or, perhaps, it is thought to serve as a sort of notice of preëmptory right in the subject.

There were received during the year at Gore Hall 4904 slips of titles of books which users of the Library thought should be bought. Of these 1347 were found to be already in the Library. This stands for a great deal of work in verifying titles and looking them up on our own catalogue. It follows then that in more than a quarter of the cases the work thus put upon the Library, where indeed it belongs, is futile. The total number of orders finally sent forward to agents was 3056, ranging from 127 in December, 1888, to 647 in September, 1889. Of this total of 3056 there was urgency for promptness in despatching orders in 165 cases, and in these cases the orders were sent either on the day of receipt or on the following day. The above total of 4904 slips is in excess of any previous year.

Our two principal American agents have procured for us within the year about 81% of the books we have ordered. Our three principal foreign agents, in London, Leipzig, and Paris, procure for us within the year not far from 75% of our orders. It is fair, however, to add that the proportion of books difficult to find is greater in these foreign orders than in the American orders. Within the last six years there has been a considerable improvement in the assiduity of our principal agents. In 1883-84 they procured 64% of our orders; this last year the same agents secured 74%. The want of organization on the part of the French book trade has often been complained of in my reports. It is apparent this year in our French agent's treatment of "continuations." He has failed to send newly-published parts of publications twice as often as our London or Leipzig agent. We have five or six other European agents for special purposes, but the books furnished by them in German, English and French are not likely to affect the proportions of the books ordered in those languages, which stands for German, 53%; for English, 30+%; for French, 16+%.

Mr. Henry C. Badger, Curator of Maps, has attached a separate number to each map in each portfolio, and has continued the cataloguing of the maps down to Portfolio No. 3225. His time has been interrupted by labor bestowed in arranging and having bound a considerable mass of correspondence of the University Treasurer from 1830 to 1868, which has now been added as Vols. IX.-XIV. of the Treasurers' Letters in the University Archives.

In conclusion I wish to explain the insufficiency of the building of the College Library, and to show how that insufficiency embarrasses the admininistration of the department and abridges the privileges of the users: —

I. There is need of more room for shelving books. Until we have more room we cannot economically reclassify the scientific part of the Library. For twelve years the users of that part of the Library have suffered from lack of such a classification. The growth of the collection largely increases this need year by year.

II. There is not enough reading-room accommodation. Class-room libraries have been resorted to to relieve the pressure upon the Library in this respect; but the increase of the reading-room use of the Library is so rapid that no expedients of this kind can meet the evil. We have been obliged recently to convert some parts of the gallery in old Gore Hall into reading-rooms.

III. The eyes of the students, and their bodily health in general, are impaired by the inadequate light and foul air of the reading-room.

IV. The deprivation of the use of such reading-room facilities as we have during the long evenings of the months from October to March — being the larger part of the College year — is generally thought to occasion a great abridgment of opportunities for the students. The present building has no means of lighting it artificially. There seem to be good reasons to dread the introduction into it of gas, or of electrical currents brought in from the public streets.

V. The delivery-room is not sufficient for the present number of users of the Library. Its size does not permit the card-catalogue cases to be extended so as to admit of more persons using them at once. The embarrassments from this source are very manifest in respect to certain methods of instruction in the College.

VI. The obvious way to remove all these difficulties is to convert the old Gore Hall into a second stack, and to build a new reading-room which shall be large, light, and well ventilated. The new methods of instruction require also various minor reading-rooms to take what is known as the "reserve book" system. To carry some portions of the instruction to its legitimate conclusions would also require a number of rooms to be used for the meeting of small advanced classes. A reading-room constructed with such adjuncts would enable us to connect what are now known as class-room libraries immediately with the Library proper, insuring better oversight and a useful propinquity to the other books of the Central Library.

Mr. John H. Storer, the Curator of Coins, makes the following report for the year: —

"The collection of coins in the College Library now consists of 1570 modern specimens, which have been classified and partially catalogued. There are several hundred ancient coins not yet arranged. Of the present collection all but 691 have been given since the last classification was made in 1859 by William Eliot Lamb of the Class of 1859. It is hoped that the custom of adding to the collection may become more general among graduates. A little help from each of a large number of Alumni would easily make the collection of great value to students of Art and History.

"In making the catalogue I have endeavored to credit each coin to the giver of it."

JUSTIN WINSOR, *Librarian*.

GORE HALL, Nov. 13, 1889.

THE HERBARIUM.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — The largest accession to the Herbarium during the year has been the gift from W. T. Thistleton Dyer, Director of the Royal Gardens at Kew, of a very valuable collection of ferns, amounting to at least 3000 specimens, mounted and authentically named according to the Kew standard. This is a set selected from the duplicates of the Kew Herbarium, and it will be of the highest value to any one who may take up the study of the order in this country. To the same source we are indebted for a full set of the Arctic plants collected on Melville Island during Captain Parry's second voyage in 1820 and named by Robert Brown; for a package of Arctic lichens collected by Sir John Richardson; and for a set of Drummond's mosses from British America. We have received from Baron Ferd. von Mueller of Melbourne over 800 species of Australian plants;

from Professor MacOwan, Director of the Botanic Garden at Cape Town, 200 species of South African plants; from Kingo Miyabe of Sapporo, Japan, about 450 species of Saghalin plants; from W. Barbey of Valleyres, Switzerland, 100 species from the Grecian Archipelago; from John Donnell Smith of Baltimore, a set of Türckheim's plants of central Guatemala, containing about 500 species; from Mr. C. G. Pringle, of Charlotte, Vt., about 450 species from northern Mexico; from the Department of Agriculture about 150 species from southern and Lower California; and from correspondents in various parts of the United States about 1000 specimens representing our own flora. In addition the Herbarium has acquired by purchase a set of 1016 tropical South American species collected by Dr. H. H. Rusby.

The additions to the library of the Herbarium amount to 106 volumes, of which 33 have been purchased, and 145 pamphlets.

These continued accretions will soon necessitate new cases in the Herbarium and enlarged shelf-room in the library. The security of the existing collections against injury from dampness and insects has demanded attention during the year. The north and western walls of the Herbarium and Library buildings have always been more or less affected with dampness to the detriment of both books and plants. To remedy this the foundations upon these sides have been more thoroughly drained and a covering of concrete has been laid for a distance of three feet from the wall, with an evidently good effect. The doors of all the Herbarium cases have also been refitted in such a manner that they can now be closed far more tightly than was before possible, rendering the cases comparatively secure against insects and dust. A thorough examination of all the mounted specimens in the cases has moreover been undertaken, with a view to their more perfect preservation, and this work has progressed satisfactorily.

The number of sheets that have been mounted for the Herbarium during the year is 8220. In addition to the usual routine work, correspondence, etc., of his office, the Curator has nearly completed and carried through the press a revision of Dr. Gray's Manual of the Flora of the Northern United States, in which he has been assisted by Professor J. M. Coulter of Indiana, and other botanists. A new edition of this work was required not only by the advances that have been made in botany since its last revision in 1868, but by the approaching expiration of the copyright, which is held by the University for the benefit of the Herbarium. The Curator has also published a report upon a large and interesting collection of plants made by Dr. E. Palmer in the Gulf of California, and some other minor articles.

During the year the resources of the Herbarium have been used in more or less extended lines of research by Mr. Kingo Miyabe of Japan, in his preparation of an account of the flora of the Kurile Islands; by Mr. J. Donnell Smith of Baltimore in the determination of a collection of Guatemala plants; and by Mr. J. N. Rose, of the U. S. Agricultural Department, in the study of a set of plants from Lower California.

SERENO WATSON, *Curator*.

THE BOTANIC GARDEN.

To the President of the University:

Sir, — As Director of the Botanic Garden, I have the honor to present the following report for the academic year 1888–89: —

The weather has been, on the whole, favorable to our plants. The comparative mildness of the winter and early spring enabled us to make rather more use of cold-frames for the flowers required by our elementary class than in any previous year. The summer was remarkable for the large amount of rain well distributed through the months of June and July. It may be here stated that since 1880 the Garden has not at any time suffered from drought, and it has not yet been necessary to make use of the water procurable from the "driven" well which was sunk at that time. This summer a thorough examination of the well showed that it is capable of yielding a very large quantity of water, which, though of undesirable "hardness," can be employed in times of scarcity.

With the approval of the Garden Committee I have continued to reduce the number of species cultivated, making a much more rigid selection of plants for the use of the students and the general public. There has not been at any time a lack of specimens for the classes in the botanical electives, and the special students conducting researches have been supplied with requisite material. Owing to the very considerable increase in size of the elementary class it was found advisable to make an arrangement with the Department of Horticulture in the Bussey Institution for the regular supply of extra specimens for analysis. The energy and great patience of the Instructor in Horticulture have rendered this arrangement of advantage to the Garden and, it is hoped, of pecuniary advantage to the Bussey Institution. A similar arrangement has been made for the coming year. It is to be desired, however, that plans of this kind should cover more than a single year; in this way alone can such arrangements secure the best advantages of economical supply both of labor and material. The greenhouses have been filled to their utmost capacity, and have yielded sufficient material for all the students in Systematic and Economic Botany. A small amount of material has been provided for the Society for the Collegiate Instruction of Women: during the next year a certain charge will be made for this material sufficient to cover its estimated cost.

The classes in Botany which have been supplied with specimens from the Garden are as follows: N. H. 3, Elementary Botany, 138 students; N. H. 7, Second Course in Botany, 9 students; N. H. 5, Biology, first half-year, requiring only a small number of specimens; N. H. 11, Systematic and Economic Botany, 2 students; Summer Class, 16 students.

It is pleasant to note that the number of pupils from the public schools of Boston, Cambridge, and Newton, visiting the Garden has notably increased. It is the practice at the Garden to furnish specimens freely to all proper applicants, when this can be done without impairing the efficiency of the Garden for our own students. The Director has good reason to believe that this policy has been of considerable service in many ways to the Garden. It has the unreserved approval of the Garden Committee.

It is unnecessary to note minor changes in arrangement of the various plots. The Head-Gardener has exhibited excellent judgment in all matters of detail and in his general management. In the front range of houses we are fortunate in having the careful service of Mr. Michael Barker, whose training for this class of work has been exceptionally thorough. The difficult task of cultivating a wide range of tropical and sub-tropical plants under conditions imposed by slender pecuniary means has been well performed by him. In other departments we have been able to retain the men who have been with us for a number of years.

In the academic year 1879–80, when the Botanic Garden was entrusted to my charge, the funds available for its support were $38,444.76. During the ten years now closed the funds have been increased by one legacy (of $20,000) and by considerable gifts. The invested funds are now as follows: Lowell Fund, $55,882.31; Botanic Department Fund, $42,780.76; total, 1889–90, $98,663.07.

To Miss Anna C. Lowell, the Botanic Garden is again indebted for a gift of one thousand dollars added to the Lowell Fund.

Besides the income derived from these funds, amounting to about $5000 annually, the Garden receives as income from the Garden house (after paying taxes and for repairs) about $350. The total income is almost enough to meet the current expenses of the Garden proper.

The other necessary expenses are those incurred in the collection and care of specimens and preparations for the Botanical Museum. These have been met by the great generosity of friends of the department. It has not failed to attract the attention of these friends of our Garden and Museum that the specimens employed to illustrate the useful products of the vegetable kingdom are particularly liable to depreciation, and are constantly exposed to destruction unless care is exercised all the time. This care involves tedious and expensive inspections from month to month, and the frequent replacement of specimens injured by the lapse of time. It should be stated that the gifts of money just referred to have been sufficient to defray not only the cost of the specimens and their care, but also to pay a part of the salary of the assistant in the Cryptogamic laboratory.

It is my pleasant duty to announce that the subscription to the fund for the erection of sections of the University Museum for Botanical Laboratories, and for the display of botanical specimens, has been closed by a gift from a recent graduate. In memory of his father, Mr. Nathaniel Cushing Nash (of the Class of 1884) contributes a sum sufficient in amount to ensure the speedy completion of the rooms required for our use. By vote of the Corporation the lecture-room in the botanical addition will be known as his memorial gift.

It is not unlikely that we shall be able to occupy some of the rooms in the addition to the Museum during the second half-year. It will be impossible to finish any of them by that date, but we shall be glad to transfer, even to unfinished apartments, the large class in elementary botany, which in spring now uses Massachusetts Upper Hall. Ever since the occupation of Harvard Hall by the Botanical Department, the classes in botany have steadily increased, until now there is not convenient room for even the smaller numbers in the advanced electives. The latter students are now working in rooms not well designed for their purposes, surrounded by the specimens which encroach everywhere on the space they need. Hence we shall transfer all the classes to the new building at the earliest possible moment.

The generosity of Mr. H. H. Hunnewell and Mr. F. L. Ames has replenished the laboratory equipment, so that on our removal from Harvard Hall and the laboratory at the Botanic Garden, we shall be able to offer to the students excellent facilities for work in all the departments of Phaenogamic and Cryptogamic Botany.

The Director wishes to express his obligations to the Overseers' Committee on the Botanic Garden. During ten years he has had the constant aid of certain members of this committee, and also of the Curator of the Museum of Comparative Zoölogy. By their encouragement and assistance over eighty thousand dollars have been obtained for the erection of the addition to the University Museum.

Besides this sum and the amount previously referred to, over twenty thousand dollars have been received for the construction of greenhouses, for equipment of the laboratories, and for present use in the Museum. Without the coöperation and hearty sympathy of the Curator of the Museum and the Overseers' Committee, and the active assistance of many members of yearly botanical classes held by me in Boston, under the auspices of the Woman's Educational Association, the raising of these large amounts would have been simply hopeless.

In the new building, happily rendered possible by these gifts, the department enters upon new cares and will have new needs. But a consideration of these needs, which cannot be said to be pressing at this moment, must be deferred until there has been provided for the Asa Gray Herbarium a fund adequate for its support. This is a matter to which you, Sir, have called attention in a previous report. In my judgment this is the most urgent need of the Botanical Department, since the establishment of a generous fund like that for which you asked will enable Dr. Watson of the Herbarium to call to his side one or more assistants who can free him somewhat from routine work, and leave him the time for completing that which is the great desideratum in American Botany to-day, namely, the Synoptical Flora, left unfinished by Professor Gray.

GEORGE LINCOLN GOODALE, *Director*.

NOVEMBER, 1889.

THE ARNOLD ARBORETUM.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — I have the honor to submit the following report of the condition and progress of the Arnold Arboretum during the year ending August 31, 1889: —

The operations of the year have been of a purely routine character. The Park Commissioners of the city of Boston did no work whatever on the extension of their roads through the Arboretum; and as it is impossible to plant the ground near the location of proposed roads until the slopes are graded, all work of this character came to a standstill two years ago. The Commissioners now propose to carry on again their plans for the development of the Arboretum, and to build during the coming year a road connecting the present completed driveway with Bussey street. This new section of road will, when finished, open the most picturesque and attractive part of the Arboretum; and will enable me to complete the arrangement of the collection of coniferous trees commenced several years ago. The building of this road, and the preparation of the ground it will open, will finish the western part of the Arboretum, in which will be found most of the large and important forest-trees requiring the longest period for the display of their true character. The various groups of trees already planted, forming part of the general collection, and the special shrub collection, have grown well during the past summer, and are in a satisfactory condition. The collection of shrubs, now very large and fairly well named, is not, I believe, surpassed by that in any other garden. The work of pruning and renovating the old and decaying trees in the natural wood goes on regularly; and the good results obtained by the system in use are now apparent in the trees first operated on bordering portions of the drive between Centre and South streets.

INTERCHANGE OF PLANTS AND SEEDS.

The interchange of plants and seeds with other Botanical and Horticultural establishments has been continued throughout the year. 16,146 plants (including grafts and cuttings) and 537 packets of seeds were distributed as follows: To all parts of the United States, 15,703 plants and 257 packets of seeds; to Great Britain, 215 plants and 108 packets of seeds; to the continent of Europe, 228 plants and 172 packets of seeds.

There have been received during the year 2809 plants and 349 packets of seeds.

HERBARIUM AND MUSEUM.

The ordinary work of the Herbarium and Museum has been continued during the year. 1175 sheets of dry plants have been added to the collection. The most important of these are a duplicate set of the Leife Herbarium of Salix, and Hymalayan and West China plants from the Herbarium of the Royal Gardens, Kew; North Mexican plants from C. G. Pringle; a set of the woody plants found on the island of Santa Cruz, off the California coast, from T. S. Brandegee; and plants of Asia Minor from Max Leichtlin. The principal addition to the Museum has been a set of 165 specimens of woods from almost every part of the world, and 20 bags of tree-fruits, presented by the Director of the Royal Gardens, Kew. Duplicate wood specimens the number of 191 have been distributed, principally among Europ investigators.

A small collection of woods cut from young trees grown in the Arboretum, illustrating the rate of growth of different species under different conditions, and a plan of the Arboretum, showing the scheme of its arrangement, prepared for the purpose by Messrs. F. L. & J. C. Olmsted of Brookline, were sent, at the request of the Secretary of Agriculture of the United States, to the Paris Exposition. They formed part of the exhibit made by the Forestry Division of the Department of Agriculture of the United States, and have been awarded a silver medal.

C. S. SARGENT, *Director.*

THE CHEMICAL LABORATORY.

To the President of the University:

Sir, — The scientific activity at the Laboratory was fully sustained during the past year. Professor Jackson, with his private assistants, has carried on the following researches: with Dr. G. D. Moore, a study of the nature of the reaction between sodium malonic ester and tribromtrinitrobenzol, together with work on the new compounds made by this action; also an investigation of the products of the action of sodium acetacetic ester upon tribromdinitrobenzol, and some work (still unfinished) on the preparation of hexamidobenzol; — with W. S. Robinson, a study of the nature of the reaction between sodium malonic ester and tribromdinitrobenzol, and work on the bromdinitrophenylacetic acid; — with W. D. Bancroft, a research on tetrabromdinitrobenzol, especially its behavior with aniline and sodium malonic ester. The dibromdinitrophenylmalonic ester was reduced to a bromamidooxindol. The work of A. W. Palmer on pentamidobenzol and that of G. T. Hartshorn on aniline trisulphonic acid, originally undertaken under Professor Jackson's supervision, were continued elsewhere and are no longer to be credited to this Laboratory. Professor Jackson also had charge of the work of three Seniors who elected Chemistry 20 *d*, a course of Special Advanced Study and Research in Inorganic Chemistry. One of these students withdrew from College on account of ill-health before the end of the year. The two remaining devoted the first term to work on potassium amide; and although no results fit to publish were reached, the main object of the course was satisfactorily obtained, as they had much valuable experience in the conduct of a difficult research and in overcoming experimental difficulties. In the second term they were transferred to work on the Aromatic Compounds (Chemistry 20 *b*) and the results they obtained were published in a paper "On some nitro derivatives of metabromtoluol," in which several new compounds were described and the constitution of some old ones determined.

Professor Hill and Dr. L. L. Jackson continued the investigation of the chlorpyromucic acids, upon which they have been engaged for several years. They studied the β chlorpyromucic and the β, δ dichlorpyromucic acids, and discovered a new dichlorpyromucic acid whose constitution has not yet been determined, but which is interesting in that it is the first representative of a class of disubstituted pyromucic acids which must be either structurally isomeric with the two forms hitherto observed, or geometrically isomeric with one of them. Professor Hill and G. R. White studied more in detail the nitropyromucic acids which had previously been made in this Laboratory. The results of the investigation are, however, not quite ready for publication.

Mr. W. L. Hendrixson, under the direction of Professor Hill, repeated the work of Bourgoin upon the so-called dioxymaleic acid, and found that pure dibrommaleic acid yielded nothing but acetic acid and carbonic dioxide under the conditions described by Bourgoin. Mr. Hendrixson also began the study of the chlorsulphopyromucic acids, but the investigation is not yet completed.

Messrs. W. T. Gibson and C. F. Kahnweiler studied several derivatives of furfuracrylic acid in 1887–88; but although their work was essentially completed at the close of that year some minor details and corrections were added last year before publication.

All the pyromucic acid used in the above-described investigations as well as the very large amounts used in the researches on the acid itself and on the allied compounds, which have been carried on by Professor Hill for more than ten years, has been made from a crude furfurol which is found among the products of the dry distillation of wood, and for which we are indebted to the kindness of Dr. E. R. Squibb of Brooklyn, N.Y. Had it not been for Dr. Squibb's great liberality, the very high price at which this product is held in Europe would have precluded the possibility of an investigation which has reflected great credit on this Laboratory. The higher boiling portions of the oil have been studied by W. L. Jennings and R. L. Curran; and although the investigation is not yet finished, these students have established the presence of a methylfurfurol boiling at 186° to 187°, which can readily be converted into a methylpyromucic acid by oxidation. This last body has been further studied by Professor Hill.

In 1887–88 the writer, in connection with Dr. T. W. Richards, sought to determine with the greatest possible accuracy the ratio between the atomic weights of oxygen and hydrogen with the view of testing the famous hypothesis that the atomic weights are in many cases at least the exact multiples of that of hydrogen. In this investigation an unexpected correction appeared (due to the contraction of the glass globe holding the gas when exhausted) which so greatly reduced the value of the atomic weight of oxygen below that previously obtained as to arouse the suspicion that in former work this important correction had been balanced by some constant error still undiscovered. Since the atomic weight of oxygen referred to hydrogen must have, very nearly at least, the same value as the specific gravity of oxygen gas referred to hydrogen gas, it seemed highly desirable to redetermine this last constant by some process which would not involve the exhaustion of the glass globe in which the gases were weighed. The writer devised a method for this purpose, and he has been busily employed during the last year in working out the experimental details which the new method involved; for here as in similar work demanding the highest experimental accuracy the chief labor of the investigation is expended on studying and eliminating causes of error. The result of his work has been to fully verify the low value of the atomic weight of oxygen previously obtained and the value of the specific gravity of oxygen gas thus determined was essentially identical with that also found by Lord Rayleigh. Although these results were embodied in a single paper of moderate length, they represented the continuous experimental work of a year.

Dr. O. W. Huntington has made some interesting observations on certain "Features of Crystalline Growth" which have an important bearing on the question of the origin of meteoric bodies. By comparing specimens of different falls he had previously shown that a continuity could be traced between the ordinary octahedral irons and the so-called cubic irons, and the inference was that both had the same structure, and that they differed only in having a more or less coarse-grained structure depending on the rapidity of the cooling of the originally molten mass. This inference has been completely confirmed; for now it appears that while the outer portions of the large Cohahuilla meteorites (preserved in our museum) have all the characters hitherto associated with a cubic structure, the interior portion of these masses is filled with large Widmanstattian plates and when exposed to the air breaks up into small octahedral plates as readily as any other of the large class of iron meteorites recognized as octahedral. Moreover, on the face of a large slab cut through the centre of one of the masses (before they came into the possession of the College) the transition from rapid to slow crystallization is distinctly shown. All this seems to indicate a certain individuality in the masses, and to point to the conclusion that they were launched into space in a melted condition and cooled each by itself.

Another observation of Dr. Huntington's on the influence of concretionary growth on crystallization looks to a more reasonable explanation of the so-called chondritic structure of the earthy meteorites than that usually accepted.

The principal results of the work of last year at the Laboratory have been published in the following papers: —

1. On the Action of Sodium Malonic Ester on Tribromdinitrobenzol. Second Paper. By C. Loring Jackson and W. S. Robinson.
2. On some Nitro Derivatives of Metabromtoluol. By W. B. Bentley and W. H. Warren.
3. On the Action of Sodium Malonic Ester upon Tribromtrinitrobenzol. By C. Loring Jackson and G. D. Moore.
4. On the Action of Sodium Acetacetic Ester upon Tribromdinitrobenzol. By C. Loring Jackson and G. D. Moore.
5. On Tetrabromdinitrobenzol. By C. Loring Jackson and W. D. Bancroft.
6. General Considerations in regard to certain Compounds prepared from Bromnitrobenzols. By C. Loring Jackson.
7. Ueber die Constitution von Bromdinitrophenylmalonsäureester. C. Loring Jackson. Berichte der deutschen chemischen Gesellschaft.
8. Ueber ein Methylfurfurol und die entsprechende Methylbrenzschleimsäure. H. B. Hill. Berichte der deutschen chemischen Gesellschaft.
9. On Chlorpyromucic Acids. By H. B. Hill and L. L. Jackson.
10. On certain Derivatives of Furfuracrylic Acid. By W. T. Gibson and C. F. Kahnweiler.
11. On the so-called Dioxymaleic Acid. By W. S. Hendrixson.
12. Features of Crystalline Growth. By Oliver W. Huntington.
13. On a new method of determining Gas Densities. By J. P. Cooke.

Except when otherwise stated, all the above papers were first published in the Proceedings of the American Academy of Arts and Sciences, of which they form more than one half of the twenty-fourth volume. The collected papers from the Laboratory during the past two years (1887–89) make a volume of more than four hundred pages, which has been bound and will soon be deposited in the University Library.

The devotion to scientific research which this record indicates will be better appreciated when it is added that the work was done in spite of the preoccupation of active teaching, and that the cost of the apparatus and material required for the investigations, and in some cases of the salaries of private assistants, was borne by the teachers themselves.

As was stated in his previous report, the expenses of the Laboratory are defrayed by an assessment on the students who work at its desks.

For several years the amount thus collected has not been quite sufficient to meet the running charges, and were it otherwise it is obvious that the College could not justly tax the great mass of the elementary students using the Laboratory to support "Special Advanced Study and Research." It is nevertheless felt to be a hardship that men who by their unselfish devotion are adding to the reputation of the University should be obliged on that account to make a serious pecuniary sacrifice; and the burden is especially felt by our more advanced students, most of whom are poor in this world's goods, and find it difficult to meet the additional laboratory charges which their investigations involve. A small endowment to cover the expenses of chemical investigation is thus greatly needed.

In his last report the Director dwelt on the pressing need in his department of larger lecture room and laboratories which the rapidly-increasing classes had entailed. The present crowding will be greatly relieved by the removal from Boylston Hall of the mineralogical museum and laboratory, which it is expected can be completed next summer. But in the alterations which the removal will involve it must be borne in mind that the relief will only be temporary, and that a first-class chemical laboratory is now built on a very different plan from that of our present building. In view of the recent great liberality of our friends it seems almost ungracious to compare our equipment with that of foreign institutions supported by large government grants; yet it is with just such institutions that our work is compared; and to the pattern thus set our own patriotism and self-respect, as well as the aspirations of our alumni and the expectations of our patrons, compel us to look. The chemical laboratory is now the most salient feature of every great German university; and these large establishments are maintained at a cost compared with which that of our humble Boylston Hall is insignificant. The latest and most complete of these was built at Zürich (1884–86) at a total cost for building and furniture of $340,000; but while we may not hope to emulate at present the equipment of this magnificent building, still it ought distinctly to be understood that a plant for chemistry comparable to that of the Jefferson Laboratory for Physics could not be provided for less than $200,000, and it would require an endowment amounting to as much more to defray the proper running expenses of such a laboratory when built. While, however, it might readily be argued that if such an investment in chemical education were wise in Switzerland, it would be still more profitable in our wealthy community; it is nevertheless certain that with us no such endowment can be expected unless from private beneficence. To raise so large a sum by general subscription for an object which only appeals to the sympathies of an educated few would, of course, be impracticable; but may we not hope that by keeping this need before our alumni some wealthy benefactor may in time appear who will find satisfaction in giving this direction to great munificence. Meanwhile we will do the best with what we have; and if we cannot vie with our European contemporaries in equipment, we will at least strive to imitate them in honest work and thorough teaching.

If we have not the aid of large government grants, we do have the sympathy and encouragement of a large body of friends; and it is pleasant to turn from a question of aspirations and needs to a history of great help, liberally and promptly given. In his last report the writer spoke of the danger from fire to which the valuable collection of minerals which he had gathered during his long term of College service was exposed in Boylston Hall, and he expressed a strong desire that a fire-proof building might be provided for it in connection with the University Museum. The same wish was expressed in an address to the Freshman Class at the conclusion of his annual elementary course of lectures on Chemistry. Soon after a subscription was opened for the purpose by a friend who gave one half of the sum required, and this large benefaction was rapidly followed by a number of liberal gifts, all accompanied with warm expressions of appreciation and interest. The subscriptions thus far received are as follows: —

Francis Bartlett	$20,000	H. H. Hunnewell	$2,000
Anne Wigglesworth	2,000	Nathaniel Thayer	2,000
Martin Brimmer	2,000	Josiah P. Cooke	2,000
Sarah M. Pratt	2,000	Stephen Salisbury	500
Frederic L. Ames	2,000		
			$34,500

It was further agreed with Professor Goodale that certain rooms of the new section, amounting to one third of the total floor-space, should be assigned to Botany on consideration that the friends of that department should contribute $9,000 towards the erection of the building. Through the efforts of Professor Goodale the amount required has been pledged and this agreement has become binding, and there is, therefore, now available towards the erection of the building and the equipment of the mineralogical museum and laboratories $43,500. The amount is sufficient for that purpose; but in order to provide a small income for the heating and care of the museum and laboratories it is highly desirable that the subscription should be increased to fully $50,000, and efforts will be made to this end. The building is already covered in, and it is expected that it will be ready to receive the collections early next summer. The writer desires hereby to express his gratitude for the great liberality and kind feeling of the friends who at this juncture have so effectively aided him in what is very near to his heart.

In his last report the Director dwelt on the frequent repairs of the fixtures and permanent apparatus of the Laboratory made necessary by long and hard usage, and on the insufficiency of the income arising from assessments on students to meet such expenses. But while it is unnecessary to repeat what has been said, it should be added that the condition is unchanged; and that during the past year the expenses exceeded the income by $303.64 in spite of an economy which it was disagreeable to exercise and prejudicial to the best interest of the University to enforce. The deficit, as in the previous year, was deducted from the annual appropriation of $800, heretofore always reserved for the purchase of new apparatus and the maintainance of the collections. This reservation ought to be carefully guarded, because in progressive sciences like chemistry and mineralogy stagnation must result unless an advance is constantly made; and the appropriation granted by the Corporation is all too small to maintain the prominent position of our Laboratory in this country, a position which has been won by great labor and devotion on the part of its teachers and students. Nevertheless some acquisitions have been made during the year. The most important is a series of over one hundred thin sections (for microscopic study) from all but a few of the stone meteorites in our museum. These sections very greatly increase the value of our magnificent collection of meteoric bodies, and were made with only an insignificant expenditure of material. There were also added to the Laboratory equipment a powerful press for the extraction of organic material and a centrifugal drier which have long been needed.

The courses of instruction in the Laboratory were all carried to completion in the usual thorough and systematic manner. The number of students availing themselves of laboratory instruction as appears from the laboratory books is as follows: —

Chemistry *B*	88
" *C*	11
" 1	81
" 2	35
" 3	54
" 4	20
" 5	18
" 20 *c*	3
" 20 *d*	3
Summer School	60
Total	373

To this enumeration must be added the very large class numbering over three hundred, chiefly members of the Freshman Class, which attended the elementary course of lectures known as Chemistry *A*.

A very successful Summer School under the direction of Dr. A. M. Comey opened on July 8 and continued until August 17. The same courses were given as in previous years, and it was attended chiefly by teachers.

In conclusion it is satisfactory to notice that two of the assistants in the Laboratory last year have been promoted to responsible and permanent positions elsewhere, Dr. Arthur M. Comey having been appointed Professor of Chemistry at Tufts College, and Mr. George R. White Teacher of Chemistry at the Phillips Exeter Academy. Dr. Louis L. Jackson also left us at the close of the year to continue his chemical studies in Europe, having received the appointment to a Parker Fellowship.

JOSIAH P. COOKE, *Director.*

THE JEFFERSON PHYSICAL LABORATORY.

To the President of the University:

Sir, — The work of the Jefferson Physical Laboratory for the year 1888–89 has been directed to two objects: first, to the better arrangement of the courses of laboratory instruction; and second, to higher work and to research.

Systematic Instruction.

Course *B*, which is the most elementary laboratory course, has been carefully systematized by Professor Hall; and the laboratory manual, describing the experiments in the course, has been rewritten by him in order to meet the wants of the schools which prepare students for admission to the University in laboratory physics. Physics *C*, which is the higher elementary laboratory course, was also carefully arranged by Dr. Whiting. In all the laboratory courses students are required to hand in at the end of each exercise, on slips provided, an account of the experiment they have performed together with the results that have been obtained. These slips are pasted in record-books against the student's name, so that the progress of the student can be noted from day to day. A course of thirteen popular lectures was given to Freshmen during the second half-year. These lectures were as follows: —

Matter and Motion,	by Dr. Whiting.
Sound,	" "
Color,	" "
Prime Motors,	by Professor E. H. Hall.
Steam Engine,	" "
Electric Lighting,	" "
Electrostatics and Electrokinetics,	by Professor B. O. Peirce.
Submarine Cables,	" "
Steady Electrical Currents,	" "
Magnetism and Electromagnetism,	by Professor J. Trowbridge.
Light,	" "
Conservation of Energy,	" "
Physical Measurements,	by Dr. Samuel Sheldon.

Each lecture was attended by at least 300 students.

These lectures were arranged to give a general introduction to the subject of Physics, and were illustrated by elaborate experiments. In order to prepare for this course it was necessary to add to the equipment of the lecture-room. A laboratory table, fitted with sinks and pneumatic troughs, with gas, water, steam, and oxygen and hydrogen gas, was provided. An apparatus for the manufacture of oxygen gas and for a supply of hydrogen — invented by Professor J. P. Cooke — was placed in the basement of the Laboratory. The gas-holders of this apparatus supplied oxygen and hydrogen at three separate points in the lecture-room, so that lantern-slides could be exhibited under all possible conditions that might arise. Two projecting lanterns, with suitable lenses and reversible slide-holders, were placed upon a platform, which was also provided with a projecting galvanometer. The lecture-room is now fitted for the popular exhibition of any physical phenomena which can be shown to an audience; and during the year we have been able to extend the use of the lecture-room, with its appliances for projection, to the classical departments of the University.

In addition to the lectures to the to Freshmen the following lectures were given: —

On the work of the Jefferson Physical Laboratory (given to the Visiting Committee of the Laboratory and to the Board of Overseers), by Professor Trowbridge.

On Measurement by means of Light Rays, by Professor Albert A. Michelson of Clark University.

On Recent Discoveries in Electricity, by Professor Henry A. Rowland of Johns Hopkins University.

On Physical Principles involved in the art of Telephony, by Professor Charles R. Cross of the Institute of Technology.

On Composite Photography, by Professor H. P. Bowditch of the Harvard Medical School.

The lectures were open to the public and were largely attended. With the exception of the lecture on the Work of the Laboratory they were given in the evening.

The higher courses in Physics were also carefully arranged. Apparatus for the use of students in Physics 3, for the measurement of Electrostatic phenomena, was carefully devised by Professor Peirce. This apparatus is the result of many years of study and experience; and the department is confident that the laboratory course in Electrostatics will give a sure foundation for those intending to pursue the subject of electricity. Physics 4 treats of Electromagnetism. New rooms have been provided for this elective in the basement of the Laboratory, where piers could be obtained and a dark room for the use of mirror-galvanometers. The rooms now occupied by the students in this elective are especially well adapted for the laboratory work in Electromagnetism. All the pipes and metallic work in these rooms are brass or copper, and the Director can state from personal observation that no European laboratory has a finer suite of rooms. The electives in Light and Heat were also provided with special rooms. The arrangement of laboratories for the several electives was studied in order that no disturbances should arise in the special rooms devoted to investigation.

In the reorganization of the department the Rumford Professorship and the Directorship were combined. The entire apparatus of the Laboratory was thus placed under the charge of the Director. A careful survey was made of the apparatus in the Physical Cabinets; the cases were numbered, and each piece of apparatus was stamped with a number and the number of the case. These numbers were then entered in a record-book. It is the policy of the department to permit the use of apparatus belonging to any one Professor, and made for any one elective, to any Professor in the department in case the apparatus is not in use and can be moved without detriment. The Physical Cabinet can also be freely used in any course of instruction. Whenever a piece of apparatus is taken from the cabinets a card is left in its place with the number of the instrument and its case-number, and the name of the taker. During the year no abuses have resulted from this policy.

It is not probable that much lecture-room apparatus will hereafter be added to the Physical Cabinet. The new lecture-room appliances and the modern methods of illustrating lectures by lantern-slides will obviate the necessity of obtaining apparatus for demonstration. The new apparatus which may be acquired by the department will be adapted for physical measurements and for use in the Laboratory courses. The new arrangement, by means of which students intending to pursue Electrical Engineering can obtain the requisite knowledge of machine-work and the use of tools in the Rindge Manual Training School, relieves the Physical Department, for the moment, from the necessity of providing instruction in practical mechanics. It is to be hoped that the University will find means of extending the privilege of receiving instruction in machine-work to a greater number of students than ten, the present very small number provided for.

During the summer of 1889 a Summer School of Laboratory Physics was established and placed under the care of Mr. Joseph Y. Bergen, Jr. Eighteen students attended this school.

The whole number of students attending the courses in Physics during I888–89 was 154. The whole number attending the courses during the present year, 1889–90, is 234.

By the death of Mr. Edward B. Lefavour, the assistant of Professor B. O. Peirce, the Laboratory has lost a valuable instructor, and science a promising votary.

ADVANCED WORK AND INVESTIGATION.

In order to facilitate advanced work and research a library-room was fitted with shelves, and provided with a table and chairs by a friend of the department. The Librarian of the University cheerfully acceded to the request that certain books should be transferred from Gore Hall to the Laboratory, and that a departmental library should be thus formed. Among the books thus transferred is a complete set of the Annalen der Physik and the Beiblätter. This publication is daily consulted by members of the Physical Department; and the labor of looking up a subject is greatly facilitated by the establishment of this department library. In the library-room has been placed a marble bust of Thomas Jefferson Coolidge, Esq., which he generously gave to the Laboratory at the request of the Director. The needs of the library are a set of the London Philosophical Magazine and of the transactions of the Royal Society of London, together with a fund for the acquisition of new scientific periodicals.

The most important change which has been made during the year, in its bearing upon advanced work, is the extension of the facilities in the machine-room. Until the year just closed the two lathes in the machine-room had been run by a steam engine, which is located in an engine-house outside the main laboratory building. Whenever a piece of brass had to be turned or similar work done, it was necessary to raise steam to 25 or 30 pounds pressure, and the services of the janitor or an engineer were required in the engine-house. Early last October the seven horse-power gas engine, which had been set up in the engine-house and which had never been in working condition, was transferred to the main laboratory building and placed in the machine-room. This engine was carefully readjusted and set up, and it now runs all the machinery in the main building. The services of the janitor or those of an engineer are no longer required to run this machinery; those who work in the machine-room have merely to light a gas jet and to regulate the engine for the work they have in hand. Moreover the janitor can be employed at the same time upon other work.

The most important additions to the machine-room and to the resources of the entire Laboratory have been a Brown & Sharpe Universal Milling Machine, presented to the Laboratory by Francis Blake, Esq., of the Visiting Committee of the department, with a set of tools for the machine; and a Universal Grinder, also of Brown & Sharp's make, which was given by the Corporation to accompany Mr. Blake's gift. Work which formerly had to be sent to instrument makers is now daily accomplished, by means of these two machines, by the assistants and Professors in the department. The amount saved to the department during the past year more than covers the interest on the entire equipment of the machine-room. In the present state of physical science it is necessary for an instructor or Professor of Physics to understand the use of tools and to have a knowledge of practical mechanics. It is evidently, however, not economical for a University Professor to devote much time to the actual labor of making or repairing apparatus. A certain amount of this work is useful to enable the Professor to see what are the difficulties in the way of the accomplishment of a design; and it generally happens that the design of a piece of apparatus undergoes a complete change during the process of working out the idea. The Professors and assistants in the department must be able to use tools in order to intelligently direct a skilled mechanic.

INVESTIGATIONS.

Mr. D. W. Shea has continued, during the past year, his investigations upon the velocity of light in a space highly magnetized. He has carefully and systematically repeated the work of previous observers in the subject of the influence of magnetism and electricity upon the propagation of light-waves, and has discovered various inaccuracies in their work. He reserves a complete discussion of the subject until his return from Germany, where he has gone under the terms of the Tyndall Scholarship. Mr. W. C. Sabine, working with the Director, undertook a careful study of the law of the dispersion of light by quartz in the invisible violet of the Solar spectrum. The new spectoscope belonging to the Rumford department was carefully adjusted and provided with a photographic attachment, which enabled one to determine the wave-length of the invisible rays. The work upon this subject will be continued during the present year. In the progress of this work upon the invisible violet rays the selective absorption of various reflecting surfaces was tested. A study was also made of the limits of absorption of the violet rays coming to the earth from the moon; and the spectrum of the moon was compared with that of the light of the sun received from various reflecting surfaces, in order to obtain, if possible, some knowledge of the character of the moon's surface, whether it is rock or ice or snow. This work is still in progress. An endeavor was made to determine the limits of the spectra of wave-lengths of metals in the invisible violet in order to see if a limit could be set to the most rapid oscillation of an atom of copper for instance; various staining processes were employed to make the photographic plates more sensitive and to give them a greater range. The limit could not be pushed farther than to wave-length 1800, which implies a length of about $\frac{1}{140,000}$ of an inch. In connection also with Mr. Sabine, the Director published a paper in the American Journal of Science, February, 1889, on the Use of Steam in Spectrum Analysis. It was found that a jet of steam directed into the electric light or into a powerful spark from a Ruhmkorf coil enabled one to obtain photographs of metallic spectra in a third of the time which was formerly necessary. This method also brought out certain hydrogen lines with great distinctness. Two French physicists have lately repeated our work and have presented a note to the French Academy upon the method.

Various investigations upon electricity were also undertaken during the year.

Professor B. O. Peirce and Dr. Willson, working upon the flow of electricity into conductors and condensers, have published a preliminary paper on their results in the Proceedings of the American Academy of Arts and Sciences for 1888–89. They have also published a paper on the determination of batttery resistance in the American Journal of Science for December, 1889.

The Director, working with Dr. Samuel Sheldon, has published in the Proceedings of the American Academy of Arts and Sciences for 1888–89 a paper on the neutralization of induction. This subject possesses considerable practical interest in view of the rapid extension of the Electric Car service and the consequent disturbances which arise on telephonic circuits. A paper was also published in the Proceedings of the Academy on the magnetism of alloys of nickel and tungsten. Through the kindness of Joseph Wharton, Esq., of Philadelphia, the Laboratory was provided with many large specimens of these alloys, which had been carefully prepared and analyzed.

During the winter the late work of Hertz on electrical waves was repeated, and certain conclusions based upon the measurement of the absorption of short waves of light by various electrically-insulating substances were published by the Director under the title of Radiant Energy and Electrical Energy in the American Journal of Science, September, 1889.

Professor Hall has been engaged upon the question of the loss of heat in the walls of the cylinders of steam engines. This work is still in progress.

Dr. Willson, in addition to the prosecution of his work with Professor B. O. Peirce, has made a careful determination of the magnetic condition of the special research-rooms of the Laboratory. The peculiar construction of the west end of the building, in which no iron has been used, makes a study of the magnetic insulation, so to speak, of this portion of the building of great interest.

The income of this great Physical Laboratory is so incommensurate with its needs and the demands of modern physical science that it becomes the duty of a Director to carefully examine the principal items in the cost of running the Laboratory. These items are: salaries of janitor, laboratory servants and fireman, and fuel. An important change for the coming year has been made in dispensing with the day and night fireman, and in giving the charge of the boilers into the hands of an intelligent and economical janitor, who weighs the amount of coal used in each firing and carefully regulates the amount of firing with reference to the outside temperature. It is evident that a cheap fireman may prove a very expensive man. Another important change for the coming year is the substitution of a low-pressure system of heating for a high-pressure system which involved the use of a steam pump. Steam at eight to ten pounds pressure was required to run this pump, whereas but five pounds pressure was required to heat the building. The condensed water throughout the building now returns by gravity. No steam is lost by discharge into the open air, and a large amount of coal will undoubtedly be saved. Moreover the quality of the coal is examined and its proportion of ash determined with a view to fixing a standard for the quality of coal supplied to the Laboratory.

The Director believes that the changes herein described will result in a yearly saving of $400 to $500.

It is to be hoped that the great gift of the Jefferson Physical Laboratory will lead the friends of the University to see that this laboratory receives the support which the state of physical science demands. The present amount of income — $4350 — is barely sufficient to meet the running expenses of the building and the cost of alterations which must be made from year to year. The times are past in which great researches in Physics can be conducted with simple apparatus. In the early days of physical science reputations were made with a fraction of the endeavor which is now necessary. In 1870 there was but one skilled electrician in New England, now there are probably one thousand of the same degree of skill as that which this one possessed. If the cost of physical investigations which have lately added to the reputation of certain American universities be examined, it will be found that each important investigation has cost from $8000 to $10,000. It is true that occasionally a genius can discover great laws by the use of bits of string and magnets, but the systematic work of a physical laboratory, like that of an astronomical observatory, requires a large endowment.

Nothing, in the opinion of the Director, would add more to the facilities of the Jefferson Physical Laboratory than the acquisition of the services of a well-trained mechanic, who could carry out the ideas of the Professors in the department in their special fields of research, and could supply the various electives with suitable apparatus. Such a mechanic could save the department much which is necessarily spent upon apparatus which comes from a distance, and cannot be tested before it is bought. Skilled mechanicians are to be found in all the great laboratories of Germany, and the professors in these laboratories agree that physical research cannot be properly undertaken without the services of a university mechanic. The Jefferson Physical Laboratory is not excelled by any laboratory in Europe in respect to its arrangement of rooms, its isolated position, its piers, and its elementary laboratories. In order to make it an active centre of physical research it needs, in addition to its present endowment, a fund of $50,000, the interest of which could be devoted to supplying materials and tools for the machine-room, and to paying the salary of a skilled mechanic.

JOHN TROWBRIDGE, *Director*.

THE OBSERVATORY.

To the President of the University:

Sir, — The Observatory has suffered a severe loss by the death of one of its oldest friends, the last survivor of those who took an earnest part in its establishment. The active aid rendered by Mr. J. I. Bowditch in every attempt to extend our work, during the entire career of the Observatory, has done much to bring it to its present condition.

A gift of fifty thousand dollars was received last summer from Miss C. W. Bruce of New York, for the construction of a photographic telescope of novel form. The importance of this gift will be explained below. If successful, it will materially affect the entire plan of work of this Observatory.

By the continued aid of Mrs. Draper, with that of the Boyden Fund, an expedition has been sent to Peru, and will thus enable some of the most important investigations made here to be extended so as to include the southern stars. The plan of maintaining two stations, one in the northern hemisphere and one in the southern, will permit all our researches to include the entire sky, and thus give them a completeneses unattainable at any single station. A second expedition to southern California gives us a mountain station under climatic conditions much superior to those of the eastern portion of the United States, and promises to be a satisfactory solution of the problem contemplated by Mr. Boyden in his will. All of these plans greatly increase the work accomplished by the Observatory and also its expenditures. Notwithstanding the large addition to its resources, the entire income has been expended in almost all of its departments. The institution is therefore much larger, but cannot be regarded as richer in the sense of being able to indulge in luxuries, or even to supply some obvious needs. The increased amount of work renders more urgent certain wants of the Observatory which have been pointed out in past years. The most important of these is a new fire-proof building. More room is constantly required, but no funds are available for this purpose. In order to replace the records and other property now contained in the main building, which might easily be destroyed in a few minutes by fire, the sum of at least one hundred thousand dollars would be required. Should such a calamity occur, the Director feels that he should not be held responsible, after pointing out this danger year after year. In at least one case a large gift to the Observatory was imperilled when the donor learned of the danger from fire. A gift of ten or even of five thousand dollars would partially remedy this difficulty by permitting the erection of a small brick building in which the photographs and manuscripts could be safely stored. Such a building would form a part of the large structure which will be imperatively needed in the near future. If the income of the Observatory is expended for this purpose, a corresponding part of the work described below must be abandoned or so much delayed as greatly to diminish its value.

Publication of results is the only certain way to secure obser permanently from destruction. This work is now being vig pursued. During a large part of the year as many as five volu Annals have been simultaneously in course of publication.

OBSERVATORY INSTRUMENTS.

East Equatorial. — This instrument has been provided w new eyepieces, and two square bar micrometers made of tinfoil ed upon glass by Professor Rogers. The observations made the year are as follows: 22 eclipses of Jupiter's satellites hav photometrically observed, making in all 430 since 1877; the com stars of S *Cephei* were observed on one night with the wedg tometer; this photometer has also been used in the observa three asteroids, (4) Vesta on 13 dates, (7) Iris on 23, and (1) on 16; and in the observation on 30 dates of zones of stars fr Durchmusterung. The following comets have been observed fo tion: 1888 V. on 8 dates; 1889 I. on 17; 1889 II. on 4; and the discovered by Brooks on July 6, on 10 dates. Companion c comet last mentioned was observed on 2 dates. At the req the discoverer, the asteroid (287) Nephthys, found by Pr Peters, was observed on 3 nights. Since February 25, 188 of 16 circumpolar variable stars has been observed about once weeks by Argelander's method and by estimate; the total nun these observations is 206. There are also 11 series of obser of the comparison stars of these variables, made with the wedg tometer and by estimate. A new variable discovered by Pet been observed photometrically 5 times, and 7 observation made by Argelander's method of a variable discovered by graphic means in the cluster G. C. 3636. These observations, those of Jupiter's satellites, have been made by Mr. Wendell.

Meridian Circle. — The reduction of the observations mad this instrument by Professor William A. Rogers continues un supervision. The catalogue of the zone from 50° to 55° of no clination is completed and the first half of it has been forw ready for printing, to the Astronomische Gesellschaft. The half will soon be sent. The discussion of the systematic errors various catalogues which contain stars between the declination 50′ and +55° 10′ has also been finished and tables have bee pared for the reduction of these catalogues to the system Astronomische Gesellschaft. The entire discussion of the motions will soon be ready for publication. It will occupy abo printed pages. Less progress has been made in the reduction observations made from 1879 to 1883, as this work has been considered less urgent than that on the zone observations just mentioned.

The observation of the southern zone comprising the declination from —9° 50′ to —14° 10′ has been continued through the year by Professor Searle, assisted by Mr. Dunne. The number of nights of observation is 143; the total number of observations is 8565, distributed as follows: 287 relating to circumpolar stars, 1024 to fundamental stars, 6889 to zone stars, and 365 to stars incidentally observed, more particularly to a series of comparison stars for the asteroid (12) Victoria, observed at the request of Dr. Gill. Continuous progress has been made in the reductions, which cannot, however, be prevented, with the present force of computers, from falling considerably behind the observations, in the manner well known to be customary, and perhaps inevitable, in undertakings of this kind.

Horizontal Telescope.—The twelve-inch horizontal telescope described in the last report was completed so that it was ready for measuring the light of all stars brighter than the fourteenth magnitude. The pressure of other work, however, prevented regular observations from being undertaken with it. It is now being used by Mr. G. E. Hale in an investigation on the solar spectrum.

HENRY DRAPER MEMORIAL.

The first research on the spectrum of over ten thousand of the brighter stars is now nearly completed and is partially in print. The photographs required for the second research on the spectrum of the fainter stars are also nearly complete. The eleven-inch telescope has been in constant use throughout nearly every clear night in photographing the spectrum of the brighter stars. This work is approaching completion for all stars bright enough to be photographed by means of our present appliances, with the large dispersion now employed. Good progress has also been made with the classification of the spectra, and the study of the slight differences in different stars. By the use of an improved process for staining plates with erythrosin, the yellow and green portions of the spectrum, even of the fainter stars, can be advantageously studied. Numerous experiments have been made with a device for measuring the approach and recession of stars, by means of an achromatic prism in front of the object-glass. Several peculiar spectra have been studied, especially that of ζ Ursae Majoris. The periodic doubling of its lines seems to be due to the rotation of two components too close to be distinguished by direct observation. The detection of bright lines in one of the stars in the Pleiades suggests a possible explanation of the legend that seven stars were formerly visible in this group.

During last spring an expedition was sent to Peru in ch of Mr. S. I. Bailey, assisted by Mr. M. H. Bailey. A station selected on a mountain about six thousand feet high and a eight miles from Chosica. All supplies for the station, inclu water, must be carried by mules for this distance. Two fi buildings covered with paper have been erected, one for an obse tory, the other for a dwelling house. Since May 9 the B telescope has been kept at work during the whole of every night. 1236 photographs have been obtained. The plan prop will cover the sky south of —15° four times, once with photogr of spectra having an exposure of an hour which will include to about the eighth magnitude; secondly, with an exposure of minutes giving the brighter stars; thirdly, with charts havin exposure of one hour, permitting a map of the southern stars to fourteenth magnitude inclusive; and fourthly, with charts havin exposure of ten minutes, including stars to about the tenth ma tude. The weather for the first four or five months was excel being clear nearly every evening. Fogs and cloud which often ered the adjacent valleys and the city of Lima did not reach to top of the mountain. The cloudy season is now beginning and work will be more interrupted. But nearly one half of the entire gramme has already been carried out. A large number of intere objects have been detected, among others several stars having b lines in their spectra. Including the photometric work desc below, the amount of material so far collected is unexpectedly l

BOYDEN FUND.

The climate of southern California seems especially favorable t undertaking desired by Mr. Boyden. An expedition under the d tion of Professor William H. Pickering was accordingly se November, 1888, to the summit of Wilson's Peak, in the vicinit Los Angeles. In order that as much useful work as possible m be accomplished, the thirteen-inch telescope and the eight-inch scope now in Peru were sent to Willows, California, where the Solar Eclipse of January 1, 1889, was successfully observed. F seven photographs were obtained by the party during the minutes of totality, and the instrumental equipment was much rior to any previously used for such a purpose. It was not until 11, that the large telescope was successfully mounted on Wil Peak, by Messrs. E. S. King and Robert Black, but since then i been kept at work throughout every clear night. The numb photographs obtained is 1155. The objects photographed are sel from a list of 625 double stars, 143 clusters and other celestial bo such as the Moon and planets. As these same objects have been repeatedly photographed at Cambridge with the same instrument, an accurate comparison of the atmospheric conditions of the two places may be made. It will of course be impossible to derive a final conclusion until the observations have extended over at least a year, but the evidence already secured shows that in summer results can be obtained at Wilson's Peak which cannot be obtained here. The difference is very pronounced for such objects as the markings on Jupiter. Clusters like that in Hercules are well resolved, so that the individual stars are easily measured, which cannot be done with the best Cambridge photographs. As a test-object the sixth star in the trapezium of the Orion nebula is clearly photographed for the first time. A new variable star has been discovered in the midst of the cluster G. C. 3636. A beginning has been made of the measurements of the position and brightness of the double stars, and it is hoped to extend this work to the clusters, and thus furnish an extensive addition to this department of micrometric astronomy.

Much experimental work has also been done at Cambridge, as is shown by the fact that nearly a thousand photographs have also been taken there. Moreover, the expedition to Peru is largely supported by the Boyden Fund. The meridian photometer will be used to extend two large series of observations to the south pole. These are the Harvard Photometry, and the zones used in the revision of the Durchmusterung. This work will furnish photom tric magnitudes of stars as bright as the ninth magnitude in all parts of the sky. The Messrs. Bailey have observed 67 series, one of them including 293 stars. In all, during less than six months, about 6700 stars have been observed, which have required 26,800 settings.

The Bruce Photographic Telescope.

For the last six years experiments have been in progress here on the use of a photographic doublet in the preparation of maps of the stars. The eight-inch telescope now in Peru is of this form and was mounted here in 1885. Since then 4500 photographs have been taken with it. With an exposure of an hour twice as many stars can be photographed as are visible with a telescope having an aperture of fifteen inches, and as many stars as can be photographed in the same time with a telescope of the usual form having an aperture of thirteen inches. Moreover with a doublet a portion of the sky covering twenty-five square degrees can be photographed with good definition, while only three or four degrees can be covered equally well with telescopes of the usual form. The time required to photograph the entire sky will be reduced in the same proportion. With a doublet each hemisphere could be covered in one year with eight hundred plates. In 1885 it was proposed to photograph the entire sky with the eight-inch telescope, enlarging the plates three times. The results would resemble in scale and size the charts of Peters and Chacornac. The generous aid of Miss Bruce mentioned above will permit this result to be attained in the original photographs, without enlargement. A contract has been made with Messrs. Alvan Clark & Sons for a telescope having an aperture of twenty-four inches and a focal length of eleven feet. Meanwhile nineteen foreign observatories have united in an Astrophotographic Congress to prepare a map of the stars to the fourteenth magnitude with telescopes of the usual form having apertures of thirteen inches. The plans have been matured with great care and skill. The courteous reference to the Bruce Telescope and its proposed work by Admiral Mouchez shows that both plans can be carried out without disadvantageous duplication. Doubtless each plan will possess certain advantages over the other. The Bruce telescope will be especially adapted to studying the very faint stars. It is hoped that those of the sixteenth magnitude and fainter can be photographed. Its principal use will probably be for the study of the distribution of the stars, for complete catalogues of clusters, nebulae, and double stars and for the spectra of faint stars. The amount of material accumulated will be enormous and the best method of discussion will form a very difficult and important problem.

MISCELLANEOUS.

Library.—The library of the Observatory has been increased during this year by the addition of 484 volumes and 336 pamphlets. The relatively small increase in pamphlets is explained by the fact that large numbers of pamphlets have been bound in volumes. An actual count of the works contained in the library on November 1, 1889, showed the total numbers of volumes and pamphlets to be respectively 6456 and 6125. The corresponding numbers found by adding the increase above stated to the totals given in the report of the University Librarian for last year are 4583 and 7911.

Time Service.—The standard time signals were sent by the Ballou clock No. 103 until August 21, since which date they have been sent by the Bond clock No. 394. No. 103 was then used as the normal clock while the sidereal clock, Frodsham No. 1327, commonly depended on for that service, was cleaned, and while the amount of mercury in the pendulum of No. 1327 was altered to secure better compensation for temperature. The average amount of the error of the time signals at the time of observing star transits has been $0\overset{s}{.}32$, the average interval between the times of these determinations being

2.9 days. The average error of the signals at 10 A.M. has been $0^{s}.27$, the number of clock comparisons taken for the purpose of keeping the error of the signals small being about 520. The average change in the daily rate from each day to the next has been $0^{s}.23$.

The Boston Time-Ball was dropped at noon on 290 week days, 287 times automatically by telegraph. When the telegraphic communication is known to be faulty, the ball is not hoisted at all; but three times such faults started the ball prematurely. Each time it was quickly caught and held by the hand-brake until the proper moment for release. Once it was dropped five minutes early, but immediately rehoisted and dropped again at the proper time.

Telegraphic Announcements. — The telegraphic distribution of astronomical intelligence has been continued during the year under the management of Mr. Ritchie. Announcements have been made of the discovery of seven asteroids, six comets, a suspected change in the crater Plinius, the light of Saturn's rings, and the separation of comet Brooks. Thirteen cable messages have been received, and seven have been despatched, while the distribution in this country has been effected by telegrams in number as follows: asteroids, 81; comets, 293; and other notices, 19.

Publications. — A considerable number of Volumes of the Annals of the Observatory have been carried to a greater or less extent through the various stages of publication. It has already been mentioned that the Catalogue of the zone from the declination of +49° 50′ to that of +55° 10′, which will form Volume XV., Part II., has been completed and sent to Germany for publication. Of Volume XVIII., Nos. VI., VII., VIII. and IX. have appeared during the year. Their subjects are as follows: Detection of New Nebulae by Photography; A Photographic Determination of the Brightness of the Stars; Index to Observations of Variable Stars; Meridian Circle Observations of Close Polar Stars. A subsequent memoir will form No. X., and will complete the volume. Volume XIX., Part I., was published during the year. It contains a summary of the meteorological observations made at the Observatory from its foundation to to the end of 1888. Volume XX., Parts I. and II., has also been published. It contains the meteorological observations made during 1887 and 1888 at the Blue Hill Observatory, and has been prepared pursuant to the system of co-operation with that institution described in the last report. Volume XXI., Part I., contains the observations collected by the New England Meteorological Society, between which and this Observatory a similar system of co-operation exists. This volume is in type and nearly ready for printing. Volume XXII. requires only the final corrections before it is printed. It contains the observations made on Pike's Peak by the United States Signal Service from 1874 to 1888 inclusive, and is published in conformity with the agreement mentioned in the last report. Volume XXIII. will contain the description of the meridian photometer used from 1882 to 1888, and a discussion of its work. Of this volume 13 pages are in type. Volume XXIV. contains the results obtained with this photometer from the zones of stars from the Durchmusterung, which formed the principal subject of its work, as well as a catalogue of about 4000 other stars. Of this volume 146 pages are in type. Volume XXV. has not yet been undertaken. Volume XXVI. contains the description and discussion of the photographic work first undertaken to carry out the objects of the Henry Draper Memorial, and its first chapter, comprising 8 pages, is in type. Volume XXVII. contains the catalogue of magnitudes and spectra of stars described above as a portion of the Henry Draper Memorial. Proof of this has been received from the printers as far as page 109.

Besides the volumes of Annals above mentioned, the following publications have appeared during the year: —

Forty-third Annual Report of the Astronomical Observatory of Harvard College. Reprinted in part in the Observatory. xii. 111.

Henry Draper Memorial. Third Annual Report of the Photographic Study of Stella Spectra conducted at the Harvard College Observatory. Edwin C. Pickering, Director. Cambridge, 1889. Reprinted in Nature, xl. 17.

A Large Photographic Telescope.

Bruce Photographic Telescope.

Beobachtungen des veränderlichen Sterns Z Sagittarii. By E. C. Pickering. Astronomische Nachrichten, cxxi. 188.

Stars having Peculiar Spectra. By E. C. Pickering. Ibid. cxxii. 159.

Photographic Chart of the Heavens. By E. C. Pickering. The Observatory, xii. 375.

Atmospheric Economy of Solar Radiation. By Arthur Searle. Proc. Am. Acad. xxiv. 26.

Physical Aspect of the Planet Mars. By W. H. Pickering. Science, xii. 83.

Soaring of Birds. By W. H. Pickering. Ibid. xiii. 31, 151, 245.

Total Solar Eclipse of Aug. 1887. By W. H. Pickering. The Observatory, xii. 213.

Determination of the Sensitiveness of Photographic Plates. By W. H. Pickering. International Annual of Anthony's Photographic Bulletin, ii. 185.

Total Solar Eclipse of Jan. 1889. By W. H. Pickering. Sidereal Messenger, viii. 337.

The Orion Nebula. By W. H. Pickering. Knowledge, xii. 191; xiii. 247.

Ephemeris of Comet 1889 I. for Jan. and Feb. 1889. By O. C. Wendell. Sidereal Messenger, vii. 82.

Ephemeris of Comet 1889 I. for March, 1889. By O. C. Wendell. Sidereal Messenger, vii. 132.

Ephemeris of Comet 1889 I. for April, 1889. By O. C. Wendell. Sidereal Messenger, vii. 225.

Ephemeris of Comet 1889 II. for June, 1889. By O. C. Wendell. Sidereal Messenger, vii. 266.

Observations of Comet 1888 I. By O. C. Wendell. Astronomische Nachrichten, cxx. 235.

Observations of Comet 1888 III. By O. C. Wendell. Astronomische Nachrichten, cxx. 251; Astronomical Journal, viii. 135.

Elements of Comet 1889 I. By O. C. Wendell. Astronomische Nachrichten, cxxi. 239.

Observations of Comet 1889 II. By O. C. Wendell. Astronomische Nachrichten, cxxi. 319; also, Astronomical Journal, ix. 8.

Observations of Comet 1889 d. By O. C. Wendell. Astronomische Nachrichten, cxxii. 217; also, Astronomical Journal, ix. 69.

EDWARD C. PICKERING, *Director.*

THE MUSEUM OF COMPARATIVE ZOÖLOGY.

To the President and Fellows of Harvard College: —

During the past year the following courses of instruction have been given at the Museum: —

A course in Biology, by Professor Farlow and Mr. G. H. Parker, assisted by Mr. W. A. Setchell.

A course in Zoölogy, by Mr. G. H. Parker, who had charge of the Biological Laboratory.

General Lectures in Zoölogy, by Professor Mark. A course of Microscopic Anatomy and a course of Embryology were also given by Professor Mark. In the Laboratory work he was assisted by Mr. C. B. Davenport.

Professors J. D. Whitney, Shaler, Davis, and Mr. J. E. Wolff gave the usual courses in Geology, Palæontology, Physical Geography, and Petrography.

The Assistants of the Museum, Professors Hagen and Faxon, Dr. Slade, Mr. Garman, Mr. Brewster, Professor Hyatt, and Dr. Fewkes, have devoted, as usual, a large share of their time in supplying specialists with material and information in their various departments.

The addition to the University Museum Building, containing the accommodation needed for the Geological and Geographical Departments, is now ready for its furniture, and I hope that by the next academic year it may be completed and occupied. In order to make this possible, however, the Museum will have to anticipate a part of its income for a number of years. The Botanical Section is also ready for the furniture and heating apparatus.

Besides these two sections, the last section of the Oxford Street façade will also be completed by the time this report is printed. Professor J. P. Cooke has succeeded in obtaining from friends of the College a sum sufficient for the erection of another section, which is to be devoted to the Mineralogical Department. With the exception of the southwest corner-piece, the building will then be complete according to the scheme laid out in 1859 for the accommodation of the Natural History Departments. This should for some time to come give ample room for the working of the departments it is intended to shelter, leaving for future exigencies the southwest corner-piece, which will eventually connect the University Museum with the Peabody Museum.

The arrangement of the rooms devoted to zoölogy, geology, and geography will be as follows: —

1. The basement will contain the storage and work-rooms of the alcoholic collections in the north wing, the receiving-room, boiler-room, and Aquarium and Vivarium in the northwest corner-piece, and the engine-room, laboratories, workshops, and photographic rooms of the Geological and Lithological Department in the west front.

2. The first floor will contain the Palæontological Exhibition Rooms and work-rooms and the Synoptic Room in the north wing; the Geological and Palæontological Laboratories in the northwest corner-piece, and the large Lecture Room of the Geological Department in the west front.

3. The second floor in the north wing will contain the Entomological Department, the special collections, the room for special students of the Geological and Palænotological Department, and a part of the Library, which is continued into the northwest corner-piece, where also are placed the Curator's Room and the Lithological Laboratories.

4. The third floor is the main Exhibition floor, containing in the north wing the Systematic and Faunal Collections; and in the corner-piece, the Atlantic and Pacific Faunal, and the Geological and Geographical Exhibition Rooms.

5. The gallery and fourth floor contain the continuation of the Systematic and Faunal Collection in the north wing, the Zoölogical Labaratories in the northwest corner-piece, and the Geographical Laboratories in the west front.

6. The fifth floor contains in the north wing the storage- and work-rooms for Vertebrate Palæntology, and for skeletons and skins of birds and mammals; in the corner-piece and the extension on Oxford Street the storage- and work-rooms for fish and reptile skeletons, a large Lecture Room, and the storage- and work-rooms of the other Invertebrates.

Professor E. B. Wilson, of Bryn Mawr, was the only investigator at the Newport Marine Laboratory. He passed a short time there this summer, and collected material for his work on Polygordius. The Museum students and assistants, Messrs. E. R. Boyer, C. B. Davenport, and W. W. Woodworth, as well as Dr. Mark, availed themselves of the facilities offered by the Biological Laboratory and the Museum Tables at the United States Fish Commission Station at Wood's Holl, for which the Museum is specially indebted to Colonel Macdonald, U. S. Fish Commissioner.

The usual amount of material from our collections has been sent for study to a number of specialists. The customary exchanges have been continued, and are mentioned in the special reports of the Assistants. Professors Scott and Osborne have continued their work on our American Fossil Vertebrates, and another part of their report is nearly ready for publication.

Among our principal accessions I may mention a skeleton of a right whale, finely mounted by Ward, and now hung from the ceiling of the large room devoted to the Systematic Collection of Vertebrates. This skeleton was originally secured for the Museum by the late Captain N. E. Atwood, of Provincetown, where the whale had been thrown ashore. In the early days of my natural history career I had the unpleasant task of assisting in the preparation of the skeleton.

We have made interesting purchases of alcoholic reptiles for the Exhibition Rooms.

Through Professor Ward we have secured a series of valuable skeletons of a few of the large fossil mammals of the Pampas in sufficiently good state of preservation to be mounted and placed on exhibition in the Tertiary Room. A number of mounted specimens have likewise been received from him to fill gaps in our Exhibition Rooms, as well as a number of casts of Pacific Islanders and other aborigines for the Faunal Rooms.

We have purchased also the continuation of the series of casts of Stegocephali from Dr. Anton Fritsch, of Prague, and casts of Phenacodus and Hyracotherium from Professor Cope.

From Lieutenant Moser, U. S. N., we have received an interesting collection of corals, taken from a cable laid off Key West in 1881, and taken up in 1888. I hope soon to publish an account of these corals, illustrating as they do the rate of growth of several species.

From Mr. Charles Wachsmuth was received a fine slab of Crinoids from the Kinderhook bed of Legrand, Marshall Co., Iowa.

We have also received a model of the Pacific Coast of the United States, prepared under the direction of Professor Davidson of the U. S. Coast Survey.

A number of collections sent out for study have been returned, and we have received from Mr. Godman a large suite of American Neuroptera, which will be worked up by Dr. Hagen for the Biologia Centrali Americana.

From the British Museum we have received a collection of five hundred birds from Central America and New Guinea; and from the American Museum of Natural History of New York an excellent plaster cast of the Chimpanzee known as "Mr. Crowley."

The Museum is greatly indebted to Messrs. Brewster, Cabot, and Slade for their interest in their respective departments. Mr. Jackson has also continued during the past year to render efficient aid to Professor Hyatt in the work of his department. Mrs. Le Conte has presented to the Museum five hundred dollars, to be expended for cabinets to include the collection of Coleoptera which Dr. Le Conte left by his will to the Museum.

Professor Faxon has kindly continued in charge of the collection of Crustacea, and he and Dr. Fewkes have spent some time in the arrangement of the Invertebrates of the Atlantic Faunal Exhibition Room, which was opened to the public during the past summer. It is still very imperfectly arranged, and there are many annoying gaps to be filled; but the room as a whole is an interesting one, and gives to the public an idea of a great marine realm such as no other Museum has as yet attempted to represent. It is hoped that the Pacific Room may also soon be opened to the public.

The Atlantic Room contains typical collections of Protozoa, Sponges, Radiates, Mollusks, Annelids, Crustacea, and Fishes, extending from the littoral to the abyssal fauna. There is also a limited space devoted to the reptiles and the birds characteristic of the seashores, and the seals, whales, and other marine mammals. A case is devoted to the apparatus used in dredging-expeditions. Samples of the deep-sea and littoral formations will also find their place in this room, and the pelagic fauna is fairly represented by glass models of the principal Acalephs, Cephalopods, and other groups not included among the alcoholic or dried specimens.

Our collections continue in excellent condition. The Museum has lost the services of Dr. Fewkes, who has had charge of the Collection of Invertebrates for the last three years, and of the Radiates since 1880.

The publications of the Museum issued during the past academic year, are as follows: —

Of the Bulletin. — Vol. XVI. [Geological Series, Vol. II.].

No. 2. On the Geology of the Cambrian District of Bristol County, Massachusetts. By N. S. Shaler. pp. 30. Map and 2 plates. October, 1888.

No. 3. Fossil Plants collected at Golden, Colorado. By Leo Lesquereux. pp. 18. December, 1888.

No. 4. The Faults in the Triassic Formation near Meriden, Connecticut. By W. M. Davis. pp. 28. 5 plates. April, 1889.

No. 5. On the Occurrence of Fossils of the Cretaceous Age on the Island of Martha's Vineyard, Mass. By N. S. Shaler. pp. 10. 2 plates. June, 1889. (Vol. XVI. *to be continued.*)

Vol. XVII.

No. 2. On the Lateral Canal System of the Selachia and Holocephala. By S. Garman. pp. 64. 53 plates. September, 1888.

No. 3. The Coral Reefs of the Hawaiian Islands. By A. Agassiz. pp. 50. 13 plates. April, 1889.

No. 4. Studies on the Primitive Axial Segmentation of the Chick. By Julia B. Platt pp. 2 plates. July, 1889. (Vol. XVII. *to be continued.*)

Vol. XVIII. — Reports on the Results of Dredging by the United States Coast Survey Steamer "Blake." — XXIX. Report on the Mollusca. Part II. Gastropoda and Scaphopoda. By W. H. Dall. pp. (2), 492. 31 plates. June, 1889.

Of the Memoirs. Vol. XIV.

No. 1. Part II. 1. — Studies from the Newport Marine Laboratory. — XVI. The Development of Osseous Fishes. Part II. The Pre-Embryonic Stages of Development. Part I. The History of the Egg from Fertilization to Cleavage. By A. Agassiz and C. O. Whitman. pp. 40. 12 plates. June, 1889. (Vol. XIV. *to be continued.*)

We have published eight numbers of the Bulletin, — four in the Geological Series, and four in the Zoölogical, including a volume by Dr. Dall containing the second part of the Report on the "Blake" Mollusca, illustrated by over thirty plates of excellent figures drawn by Dr. McConnell. This final report contains 492 pages, and is a valuable contribution to our knowledge of the Mollusks of the East Coast of the United States, and of the Gulf of Mexico and Caribbean Sea. It has been prepared by Dr. Dall with his usual care and skill.

One number of the Memoirs has been issued, — the continuation by Professor Whitman and myself of our Memoir on the Development of Osseous Fishes.

Dr. P. H. Carpenter is making good progress in his final Report of the "Blake" Comatulæ. The proofs of six plates of the Memoir he is preparing have been received from him.

Among the monographs in preparation I may also mention a paper on the Genesis of the Arietidæ, by Professor Hyatt, now in press. This will be published jointly by the Smithsonian Institution and the Museum. The Smithsonian Institution has also published an Explanation, by Mr. Fewkes, of the Plates of a Memoir on Astrangia, prepared for Professor Louis Agassiz, but never completed by him. It was in the hands of Mr. Pourtalès for completion at the time of his death.

Mr. Louis Cabot is also preparing the third part of his Memoir o the early stages of the Odonata. The plates are completed.

Mr. Garman has sent in for publication in the Bulletin an interest ing paper on the Cave Animals of Missouri.

I am myself preparing a Memoir on a new Stalked Crinoid (*Cal mocrinus*) dredged by the "Albatross" off the Galapagos on he voyage from New York to San Francisco. This is one of the mo interesting Crinoids dredged by any of the deep-sea expeditions. I is closely allied to Millericrinus and other Apiocrionidæ, and form a part of the collection of Echinoderms, made by the "Albatross and kindly sent me for study by Colonel Macdonald, the U. S. Fis Commissioner.

The accessions to the Library are more numerous than in the pre vious year, and it now numbers more than twenty thousand volumes exclusive of the Whitney Library. This growth is principally due t the increase of our exchange list.

This is the first year in which the Museum has practically live within its income, while fully sustaining its usual work not only i instruction, but also in the increase of its collections and of it Library. Its publications have equalled in importance those of fo mer years, and the investigations carried on within its walls have no been in the least curtailed. Still, until the advances made to th Museum by the Corporation for the Geological Section and for th purchase of fossils have been repaid, we cannot be expected to sho as great activity as if our resources were unencumbered. We nee about thirty thousand dollars to place the Museum on a free footin again.

ALEXANDER AGASSIZ.

CAMBRIDGE, October 1, 1889.

THE PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — The Trustees of the Peabody Museum of American Archae ology and Ethnology respectfully submit the following abstract, pre pared by the Curator from his report presented to the Trustees a their annual meeting, for the year ending September 30, 1889: —

In the last report mention was made of the addition to the Museu building then in process of construction. The addition is sixty fee square and five stories high, including the two galleries; and while i is sufficient for the arrangement of collections now stored in th

Museum, it does not provide for future wants. It is already evident that before the several halls and galleries are supplied with cases and the specimens arranged, the demand for room will be as great as ever. Fortunately the building, which is now 100 feet long, is only one half of the contemplated structure, and as the land required for its extension has been secured for a reasonable length of time, we can hope that before the twenty years have expired means will be obtained for the completion of this wing of the great University Museum.

The sum given by Mr. Peabody in 1866 for a building fund was $60,000. There has now been expended: —

Cost of first section of the building, 87 × 44 feet, external measurement, including steam heating, plumbing, elevator, gas, cases, and furniture, and all repairs to date	$80,638.96
Cost of new section, 64 × 61½ feet, external measurement, including two boilers and steam heating throughout, gas, plumbing, and incidentals to date	34,228.00
Cases in Curator's office and laboratory	654.76
Total expended to date	$115,521.72

There is still remaining $29,258.91 of the original fund of $60,000. Depending on the income of this fund of $29,000, it will be at least eight years before all the new halls can be provided with cases. This long delay in the arrangement of the collections, which should be exhibited at once, is greatly to be regretted, but it is inevitable unless aid is received both for cases and for assistants to help in the work. This state of affairs naturally leads to suggestions for hastening the complete exhibition of the important collections now in the Museum, and their presentation as a whole in the method of arrangement which, although only partially carried out in the present exhibition rooms, has already given to the Museum a leading position among similar institutions. To this end it is suggested that special endowments be solicited for the several departments of the Museum. Should these be secured, the income of each endowment fund could be expended first for cases and afterward in the care and increase of the department, and in the publication of memoirs upon the collections belonging to that department. In this way the care and growth of the Museum would be assured for all time. This would also secure a corps of special students and assistants, who would receive systematic training in museum work, in field exploration, and in original research.

As it is now, every detail in the arrangement of specimens falls to the Curator, and it is impossible for one man to do this work unassisted and at the same time keep up with all the demands on him in the administration of the Museum and the direction of field explorations. It is also important that assistants should be trained in the methods of the Museum in order that its future should be one of continuous development.

The work-rooms in the basement of the new part of the building are now in use and furnish the long-desired facility for the unpacking and preliminary arrangement of collections as they are received.

The rooms on the first floor of the addition are also in use, and the Curator's office and laboratory have been provided with cases and proper furniture. This gives the opportunity of spreading out and cataloguing the material, which for several years has been accumulating in the stacks of trays wherever they could be stored in the old building. The rest of this floor has been fitted up for a lecture hall; but in this room will be exhibited the Synoptic Collection, which will be so arranged as to illustrate the principal characteristics and the arts and customs of the several races of man. Owing to the difficulty and expense of obtaining much of the material required for this particular collection it will undoubtedly be a long time before it will be as complete as it is hoped to make it. However, as the Curator has for some time contemplated the arrangement of such a collection, sufficient material has been gathered to make a creditable beginning as soon as the new cases are ready.

The several explorations made in various parts of America during the past year have resulted in a large amount of interesting material for the Museum, and in adding considerably to our knowledge of the ancient peoples of our continent. Of explorations still in progress it will be best to defer mention until the results can be presented in a satisfactory manner. It is gratifying to state, however, that at no previous time has so much interest been taken in the American work, nor has more liberality been shown on the part of patrons of American exploration, both in regard to expeditions in connection with the Museum and under other auspices. It is evident that there is now a widely-spread interest in American archaeology and ethnology, and it is greatly to be hoped that the Museum will continue to receive the means for doing its full share in this direction.

Among the results which may be mentioned now are the additional discoveries of palaeolithic implements in the Trenton gravel by Dr. Abbott, and of those from the older or Columbia gravel by Mr. Cresson. The latter field assistant has shown that man existed in the Delaware valley at a time long preceding the deposit of the glacial gravels at Trenton, where Dr. Abbott first discovered these rude implements of early man in America. Mr. Ernest Volk, a gentleman who was appointed field assistant this year, has also made several discoveries of great interest in relation to the early people of the

Delaware valley, and has sent an important collection to the Museum as the result of his year's work.

The exploration, by the Curator, of a burial-place of Massachusetts Indians at Winthrop has furnished much of interest in relation to this tribe at the time of first contact with the Colonists. This, together with his exploration of a burial-place of the Seneca Indians in the Genesee valley, also of the time of early contact with the whites, has greatly increased the means of illustrating this period, both as to skeletons of the Indians and also in relation to their native art and their burial customs. To these may be added the results of his brief examination of several village sites of the Indians of the Potomac valley and a collection of the chipped stones and implements in various stages of manufacture from a singular ancient workshop of great extent on the hillside at Piney Branch, in the suburbs of the city of Washington.

The Curator passed nine weeks at the Serpent Mound Park and has completed the explorations in the immediate vicinity of the Serpent Mound, although by no means of the adjoining region, where he hopes to continue the work. From the Serpent Mound Park the camp was removed to the Little Miami valley, and explorations under the immediate charge of Dr. Metz and Mr. Saville were renewed at the Turner group of earthworks, where so much of interest has been discovered in former years. Several facts of importance in connection with previous discoveries were obtained; but there is still much work to be done in this vicinity, and it is hoped that means will be secured for the completion of the exploration next year.

As the work at the Serpent Mound is now virtually completed, it is an appropriate time to state the receipts and expenditures, as they have not been included in previous reports, as follows: —

Received from the Committee of Boston Ladies (the subscriptions from about seventy ladies and gentlemen of Boston and vicinity)		$5,928.00
From a lady of New York		25.00
In 1888. —	From the Akron (Ohio) Scientific Society	20.00
	" gentleman of Cleveland, Ohio	10.00
	" lady of Concord, Mass.	5.00
	" lady of Boston	200.00
	" lady of Boston	100.00
	" gentleman of Boston	100.00
	Grant by American Association for the Advancement of Science	200.00
In 1889. —	From a friend	2,000.00
	" lady of Concord, Mass.	15.00
	" gentleman of Boston	10.00
	" gentleman of Boston	100.00
	" lady of New York	25.00
		$8,738.00

Expended, 1887–89: —

Cost of land now enclosed as a free park	$3,600.00	
Survey and legal expenses	82.00	
Protection of the Serpent Mound, exploration, building fences, making roads and paths, planting native trees, and in otherwise beautifying the Park as an appropriate surrounding for the archaeological treasure which it contains	4,887.03	
	$8,569.03	
Balance on hand	168.97	
		$8,738.00

As the Park is exempted from taxation by a special law of the State of Ohio the annual hay crop, and, in future years, the discriminating cutting of timber from certain portions will probably prevent it from becoming a source of expense. It should always be remembered, however, that we have in this unique monument of an ancient race an object as important, and as much within our province to preserve, as any within the walls of the Museum.

A full account of the Serpent Mound and the explorations around it will soon appear in the Century Magazine. This article, with the aid of many illustrations, will enable all who have not seen this ancient earthwork to understand its significance and its importance in American archaeology.

The accessions to the Museum, other than those received from the special explorations, are from nearly a hundred sources and amount to several thousand specimens, principally the gifts of friends in various parts of the country and a few from foreign lands. Many of these are of particular interest; but to mention them would take more space than is permitted for this abstract, and reference must, therefore, be made to the lists published by the Museum. Nearly 1200 entries have been made in the catalogue during the year, and an effort is now being made to bring the catalogue up to date, although, as can be readily understood, this is difficult to accomplish with the limited assistance now at the Curator's command. This is no reason, however, for lack of effort in collecting specimens, as all additions can be well cared for, and each lot kept intact until finally arranged. It must be constantly borne in mind that now is the time to collect the fast vanishing remains of the past, and that the Museum owes it to future students of American archaeology to secure this material while it is yet possible.

The additions to the library of the Museum have been catalogued at the General Library. They consist of forty-seven volumes and eighty-eight pamphlets, received from forty-nine persons and from forty-one societies, museums, and journals. Forty-five photographs have been received from three persons.

Since the last report the first number of the new publication of the Museum has been issued, and the proposed plan of publication by subscription bids fair to be successful. Dr. Francis M. Weld, of the Visiting Committee appointed by the Overseers, has given special encouragement to this undertaking, and by his own contributions and by interesting others he has greatly aided the publication of future "Archaeological and Ethnological Papers of the Museum," a second number of which is now in press.

It would be greatly to the benefit of the Museum should the Overseers assign to it a special visiting committee.

There has been expended during the year on account of the Museum: —

Collections, and explorations, not including those of the Serpent Mound	$1,972.40
Publications	635.19
Fuel, gas, and water	404.17
Postage, express, telephone	278.24
Library	58.73
Incidentals	168.28
Salaries and special assistance	3,930.04
	$7,447.05

HENRY WHEATLAND,

Secretary of the Board of Trustees.

CAMBRIDGE, Nov. 19, 1889.

APPENDIX.

I.

RESIGNATIONS.

Francis Parkman, Fellow of the Corporation, October 8, 1888.

W. D. Bancroft,
Otto R. Hansen, Proctors, October 8, 1888.
J. O. Perkins,

Henry Preble, Assistant Professor of Latin, as of December 24, 1888.

James Rignall Wheeler, Instructor in Greek and Latin, June 18, 1889.

Charles Hall Grandgent, Instructor in Modern Languages, September 24, 1889.

George F. Grant, Instructor in the Treatment of Cleft Palate and Cognate Diseases, September 24, 1889.

Charles Wilson, Instructor in Orthodontia, September 24, 1889.

II.

APPOINTMENTS.

[UNLIMITED, OR FOR TERMS LONGER THAN ONE YEAR.]

John Trowbridge, to be Director of the Jefferson Physical Laboratory, October 28, 1888.

Frederick Lothrop Ames, to be a Fellow of the Corporation, October 17, 1888.

Joseph Lovering, to be Hollis Professor of Mathematics and Natural Philosophy, Emeritus, October 17, 1888.

Benjamin Marston Watson, to be Instructor in Horticulture, November 12, 1888.

Hans C. G. Von Jagemann, to be Assistant Professor of German for five years from September 1, 1889, April 29, 1889.

Robert Sanderson, to be Assistant Professor of French for five years from September 1, 1889, May 13, 1889.

Frédéric César Sumichrast, to be Assistant Professor of French for five years from September 1, 1889, May 13, 1889.

Charles Hall Grandgent, to be Instructor in Modern Languages, May 13, 1889.

Charles Gross, to be Instructor in History, May 13, 1889.

Charles Pomeroy Parker, to be Instructor in Greek and Latin, May 13, 1889.

John Eliot Wolff, to be Instructor in Petrography, May 13, 1889.

Frank Winthrop Draper, to be Professor of Legal Medicine, June 24, 1889.

William Henry Pickering, to be Assistant Professor of Astronomy for five years from September 1, 1889, June 24, 1889.

Edward Stevens Sheldon, to be Assistant Professor of Romance Philology for five years from September 1, 1889, June 24, 1889.

Edward Cornelius Briggs, to be Assistant Professor of Dental Materia Medica for five years from September 1, 1889, June 24, 1889.

[FOR ONE YEAR OR LESS.]

For 1888–89.

Wilder Dwight Bancroft,
Carl Adolf Ewald,
Frank Walter Nicolson,
William Albert Setchell, } to be Proctors, October 1, 1888.

Arthur Messinger Comey,
Carl Adolph Ewald,
Louis Lincoln Jackson,
George Rantoul White, } to be Assistants in Chemistry, October 8, 1888.

Joseph Young Bergen, Jr.,
Edgar Buckingham,
Edward Brown Lefavour,
Samuel Sheldon, } to be Assistants in Physics, October 8, 1888.

Stanislas Danion, to be Assistant in French, October 8, 1888.

Charles Benedict Davenport, to be Assistant in Zoölogy, October 8, 1888.

William Francis Ganong, to be Assistant in Botany, October 8, 1888.

Edward Hale, to be Assistant in Homiletics, October 8, 1888.

William Albert Setchell, to be Assistant in Biology, October 8, 1888.

Edward Terry Sanford,
Earl Morse Wilbur, } to be Proctors, October 8, 1888.

Arthur Bliss Seymour, to be Assistant in the Cryptogamic Herbarium, October 15, 1888.

Charles Pomeroy Worcester, to be Assistant in Chemistry, October 15, 1888.

Frank Walter Nicolson, to be Instructor in Sanskrit, October 29, 1888.

James Rignall Wheeler, to be Instructor in Greek and Latin, October 29, 1888.

Henry J. Bigelow,
William Gray,
Henry Lee, } to be Trustees of the Museum of Fine Arts, January 14, 1889.

Henry C. Badger, to be Curator of Maps, January 28, 1889.

David A. Wells, to be Lecturer on the Principles of Taxation, January 28, 1889.

Edward H. Ammidown, to be Lecturer on Protection, February 25 1889.

Elbridge Gerry Cutler, to be Instructor in the Theory and Practice of Physic, October 8, 1888.

Edward Cowles, to be Clinical Instructor in Mental Diseases, October 15, 1888.

Orlando Witherspoon Doe, to be Clinical Instructor in Gynaecology, October 15, 1888.

John Wheelock Elliot, to be Clinical Instructor in Gynaecology, October 15, 1888.

George Washington Gay, to be Clinical Instructor in Surgery, October 15, 1888.

Franklin Henry Hooper, to be Clinical Instructor in Laryncology, October 15, 1888.

Philip Coombs Knapp, to be Clinical Instructor in Diseases of the Nervous System, October 15, 1888.

George Horton Tilden, to be Clinical Instructor in Dermatology and Syphilis, October 15, 1888.

Francis Sedgwick Watson, to be Clinical Instructor in Genito-urinary Surgery, October 15, 1888.

Amos Lawrence Mason, to be Instructor in Clinical Medicine, October 15, 1888.

Edward Marshall Buckingham, to be Assistant in the Diseases of Children, October 15, 1888.

Charles Francis Withington, to be Assistant in Clinical Medicine, October 15, 1888.

Arthur Henry Stoddard, to be Demonstrator of Mechanical Dentistry, October 8, 1888.

Nathaniel Thayer Kidder, to be Instructor in Botany, November 12, 1888.

For 1889–90.

Phillips Brooks,
William Lawrence,
Theodore Chickering Williams,
George Angier Gordon,
Lyman Abbott,
to be Preachers to the University, June 10, 1889.

Robert Swain Morison, to be Librarian of the Divinity School, June 24, 1889.

Edward Napoleon Kirby, to be Instructor in Elocution at the Divinity School, September 24, 1889.

Heman White Chaplin, to be Lecturer on Criminal Law, April 29, 1889.

William Schofield, to be Instructor in Roman Law, and in Torts, April 29, 1889.

Alexander Viets Griswold Allen, to be Lecturer on Ecclesiastical History, May 13, 1889.

Frederick Anderegg, to be Instructor in Mathematics, May 13, 1889.

Joseph Lybrand Markley, to be Instructor in Mathematics, May 13, 1889.

Adolph Caspar Miller, to be Instructor in Political Economy, May 13, 1889.

George Santayana, to be Instructor in Philosophy, May 13, 1889.
Frank Bigelow Tarbell, to be Instructor in Greek, May 13, 1889.
Daniel Denison Slade, to be Lecturer on Comparative Osteology, May 27, 1889.
George Pierce Baker, Jr., to be Instructor in Forensics, May 27, 1889.
George Rice Carpenter, to be Instructor in English, May 27, 1889.
John Joseph Hayes, to be Instructor in Elocution, May 27, 1889.
Thaddeus William Harris, to be Instructor in Geology, May 27, 1889.
George Howard Parker, to be Instructor in Zoölogy, May 27, 1889.
William Goodrich Thompson, to be Instructor in Forensics, May 27, 1889.
James Rignall Wheeler, to be Instructor in Greek and Latin, May 27, 1889.
Frank Beverly Williams, to be Instructor in Political Economy, May 27, 1889.
Alfred Bull Nichols, to be Instructor in German, June 10, 1889.
William Francis Ganong, to be Assistant in Botany, June 18, 1889.
Edward Hale, to be Assistant in Homiletics, June 18, 1889.
Walter Scott Hendrixson, to be Assistant in Chemistry, June 18, 1889.
Theodore William Richards, to be Assistant in Chemistry, June 18, 1889.
William Albert Setchell, to be Assistant in Biology, June 18, 1889.
Arthur Bliss Seymour, to be Assistant in the Cryptogamic Herbarium, June 18, 1889.
William Codman Sturgis, to be Assistant in Cryptogamic Botany, June 18, 1889.
John Carew Rolfe, to be Instructor in Greek, September 24, 1889.
Charles Benedict Davenport, to be Assistant in Zoölogy, June 24, 1889.
Willliam McMichael Woodworth, to be Assistant in Microscopical Anatomy, June 24, 1889.

John Willliams White,
William Elwood Byerly,
Albert Bushnell Hart,
Henry P. Walcott,
William Hooper,
George B. Morison,
to be members of the Committee on the Regulation of Athletic Sports, September 24, 1889.

Walter Alexander,
Clarence Walter Ayer,
Charles Towne Billings,
Edgar Buckingham,
George Pope Furber,
Francis Cleaveland Huntington,
Byron Satterlee Hurlbut,
William Albert Setchell,
Earl Morse Wilbur,
to be Proctors, June 24, 1889.

William Burdelle Bentley,
Wilfred Bolster,
Collier Cobb,
Frank Walter Nicolson,
Frank Dixon Peale,
Edgar Judson Rich,
Livingston Boyd Stedman,
Frank Chester Southworth,
Charles Martin Thayer,
to be Proctors, September 24, 1889.

John Cassan Wait, to be Instructor in Surveying and Drawing, May 27, 1889.

Samuel Holmes Durgin, to be Lecturer on Hygiene, June 4, 1889.

Theodore Willis Fisher, to be Lecturer on Mental Diseases, June 4, 1889.

Edward Hickling Bradford, to be Instructor in Surgery and Orthopedics, June 4, 1889.

Elbridge Gerry Cutler, to be Instructor in the Theory and Practice of Physic, June 4, 1889.

Harold Clarence Ernst, to be Instructor of Bacteriology, June 4, 1889.

William Whitworth Gannett, to be Instructor in Pathology and Auscultation, June 4, 1889.

George Minot Garland, to be Instructor in Clinical Medicine, June 4, 1889.

Charles Montraville Green, to be Instructor in Obstetrics, June 4, 1889.

Amos Lawrence Mason, to be Instructor in Clinical Medicine, June 4, 1889.

James Jackson Putnam, to be Instructor in Diseases of the Nervous System, June 4, 1889.

Henry Parker Quincy, to be Instructor in Histology, June 4, 1889.

Joseph Weatherhead Warren, to be Instructor in Physiology, June 4, 1889.

Arthur Tracy Cabot, to be Clinical Instructor in Genito-urinary Surgery, June 4, 1889.

Edward Cowles, to be Clinical Instructor in Mental Diseases, June 4, 1889.

Orlando Witherspoon Doe, to be Clinical Instructor in Gynaecology, June 4, 1889.

John Wheelock Elliot, to be Clinical Instructor in Gynaecology, June 4, 1889.

George Washington Gay, to be Clinical Instructor in Surgery, June 4, 1889.

Francis Boott Greenough, to be Clinical Instructor in Syphilis, June 4, 1889.

John Homans, to be Clinical Instructor in the Diagnosis and Treatment of Ovarian Tumors, June 4, 1889.

Franklin Heney Hooper, to be Clinical Instructor in Laryngology, June 4, 1889.

Philip Coombs Knapp, to be Clinical Instructor in Diseases of the Nervous System, June 4, 1889.

Abner Post, to be Clinical Instructor in Syphilis, June 4, 1889.

George Horton Tilden, to be Clinical Instructor in Dermatology and Syphilis, June 4, 1889.

Oliver Fairfield Wadsworth, to be Clinical Instructor in Ophthalmoscopy, June 4, 1889.

George Lincoln Walton, to be Clinical Instructor in Diseases of the Nervous System, June 4, 1889.

Francis Sedgwick Watson, to be Clinical Instructor in Genito-urinary Surgery, June 4, 1889.

Herbert Leslie Burrell, to be Demonstrator of Surgical Appliances, June 4, 1889.

Francis Augustine Harris, to be Demonstrator of Medico-legal Examinations, June 4, 1889.

Otis Kimball Newell, to be Assistant Demonstrator of Anatomy, June 4, 1889.

Edward Marshall Buckingham, to be Assistant in Diseases of Children, June 4, 1889.

William Merritt Conant, to be Assistant in Anatomy, June 4, 1889.

Francis Henry Davenport, to be Assistant in Gynaecology, June 4, 1889.

William Carroll Emerson, to be Assistant in Chemistry, June 4, 1889.

Robert Willard Greenleaf, to be Assistant in Histology and Embryology, June 4, 1889.

George Howard Monks, to be Assistant in Operative Surgery, June 4, 1889.

Edward Reynolds, to be Assistant in Obstetrics, June 4, 1889.

Charles Locke Scudder, to be Assistant in Clinical Surgery, June 4, 1889.

Thomas Foster Sherman, to be Assistant in Diseases of Children, June 4, 1889.

Charles Pratt Strong, to be Assistant in Gynaecology, June 4, 1889.

Charles Wendell Townsend, to be Assistant in Obstetrics, June 4, 1889.

Herman Frank Vickery, to be Assistant in Clinical Medicine, June 4, 1889.

Charles Francis Withington, to be Assistant in Clinical Medicine, June 4, 1889.

Charles Pomeroy Worcester, to be Assistant in Chemistry, June 4, 1889.

George Howard Monks, to be Instructor in Surgical Pathology, June 18, 1889.

Jere Edmund Stanton, to be Instructor in Oral Pathology and Anatomy, June 18, 1889.

Allston Gray Bouvé,
William Parker Cooke,
Forest Greenwood Eddy,
Edward Earl Hopkins,
to be Instructors in Operative Dentistry, June 18, 1889.

Henry Michael Clifford, to be Demonstrator of Operative Dentistry, June 18, 1889.

Arthur Henry Stoddard, to be Demonstrator of Mechanical Dentistry, June 18, 1889.

Frederick Eugene Banfield, to be Clinical Instructor in Operative Dentistry, June 24, 1889.

Albert Henry Tuttle, to be Instructor in Entomology, June 4, 1889.

Nathaniel Thayer Kidder, to be Instructor in Botany, June 18, 1889.

Daniel Emerson, to be Resident Surgeon at the Veterinary Hospital for one year from June 1, 1889, May 13, 1889.

Edward Campbell Beckett, to be Instructor in Veterinary Surgery and Superintendent of the Veterinary Hospital, September 24, 1889.

Frederick Edward Cheney, to be Instructor in Ophthalmology, September 24, 1889.

Daniel David Lee, to be Instructor in Anatomy, September 24, 1889.

Kenelm Winslow, to be Instructor in Materia Medica and Botany, September 24, 1889.

AN ACT TO AMEND CHAPTER 173 OF THE ACTS OF THE YEAR 1865 IN RELATION TO THE BOARD OF OVERSEERS OF HARVARD COLLEGE.

Be it enacted, etc., as follows:

SECT. 1. Section 2 of Chapter 173 of the acts of the year 1865 is amended by striking out all of said section after the word "list" in the eleventh line thereof, and by inserting in place thereof the following: The names of the persons voted for, and the number of votes received for each person, shall be entered in words at length by said inspectors upon a record kept by them for that purpose, which shall, after such election, be forthwith made up, signed and delivered by them to the Board of Overseers. The persons who shall receive the highest number of votes for the places in said board shall, to the number of overseers to be elected, be deemed and declared by said board elected to be members thereof for the following terms, to wit: The five persons receiving the highest number of votes shall be declared elected to the class having the longest term, and in case any vacancy or vacancies exist in any other class or classes, the person voted for shall be declared elected to such vacancy or vacancies according to the number of votes received by them, the person or persons receiving the next highest number of votes being declared elected to the class having the next longest term to run, and so on in order for other vacancies. In case, by reason of a tie, it should be uncertain to which class any persons should be declared elected, the Board of Overseers shall by vote determine to which classes the persons receiving the same number of votes shall be assigned.

SECT. 2. This act shall take effect upon its passage.

Approved March 19, 1889.

AN ACT TO ENLARGE THE POWER OF THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE TO HOLD TAXABLE REAL ESTATE.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECT. 1. The President and Fellows of Harvard College may accept, take and hold, and may sell at their discretion, unless expressly forbidden by the terms of gift, any real estate within or without this Commonwealth which has been or may hereafter be given or devised to them for educational purposes; and they may, from time to time, invest any portion of the property held by them, as they may think judicious, in productive real estate within the Commonwealth, and may sell any such estate at their discretion: *provided, however*, that nothing herein contained shall be construed to give the said corporation any claim to greater exemption from taxation than it now has under the constitution and laws of this Commonwealth.

SECT. 2. This act shall take effect upon its passage.

Approved March 13, 1889.

An Act to enlarge the Power of the President and Fellows of Harvard College of holding Real Estate.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same:

That the President and Fellows of Harvard College and their successors in office, be and they are hereby authorized to purchase, accept, take and hold lands, tenements and hereditaments within this Commonwealth to the clear yearly value of twelve thousand dollars, in addition to what they now are by law authorized to hold, and in addition to the public buildings of said University occupied by the students and for other public purposes.

Passed 12th February, 1814.

FOXCROFT CLUB.

[The Steward provides from day to day other dishes within the same range of prices.]

Breakfast and Lunch.

Oatmeal and milk. (A large saucer of oatmeal and a gill of milk. Sugar free)	4 cts.
Crackers and milk. (Nine soft crackers and about a pint of milk)	7 "
Bread, — white, brown, or Graham. (Two fair slices)	1 "
Butter. (About $1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{2}$ inch)	2 "
Baked apples. (One large or two small and a gill of milk. Sugar free)	3 "
Cold meat, — beef, mutton, veal or ham. (Little used)	7 "
Hot fish-balls. (Two)	3 "
" potatoes, baked. (One large or two small)	2 "
" baked beans. (A large plate)	5 "
" eggs, boiled, dropped, or on toast. (Two eggs)	8 "
" corn-bread. (A piece equivalent to the portion of bread)	1 "

Dinner.

Soup, various kinds. (Little used)	2 cts.
Hot meat and potatoes, generally beef. (A fair slice)	9 "
Hot pudding, — tapioca, rice, bread, Indian, &c.	5 "
Pie, — squash, mince or apple	5 "
Baked apples (as above)	3 "
Bread (as above)	1 "
Butter (as above)	2 "

At any Meal.

Coffee. (A gill of milk. Sugar free)	3 cts.
Tea. (A gill of milk. Sugar free.) (Little used)	3 "
Milk. (About half a pint)	2 "
An orange	2 "
A banana	2 "

NUMBER OF ORDINARY DEGREES IN 1889.

Bachelors of Arts of the Class of 1889	212
Bachelors of Arts out of course	4
Bachelor of Science	1
Bachelors of Divinity	2
Bachelor of Divinity and Masters of Arts	1
Bachelors of Laws	17
Bachelors of Laws and Masters of Arts	10
Bachelors of Laws out of course	2
Doctors of Medicine	54
Doctors of Dental Medicine	17
Doctors of Veterinary Medicine	5
Masters of Arts	23
Masters of Arts out of course	2
Doctors of Philosophy	4
Doctors of Science	2
Total	356

INDEX.

PAGE
Appointments . . . 4, 7, 192–197
Arnold Arboretum, report on . . . 156–158
“ “ permanent systematic arrangement of, delayed . 30, 156
“ “ exchanges and gifts . . . 30, 157
Athletic Sports . . . 10–14
Botanic Garden, report on . . . 153–156
“ “ use of plants from, by students . . . 153, 154
“ “ financial condition of . . . 29, 154, 155
Botanical Museum . . . 29, 155
Bussey Institution, report on . . . 25, 26, 137, 138
Cary Athletic building . . . 11
Chemical Laboratory, report on . . . 30, 31, 158–165
“ “ facts about former assistants in . . . 30, 31
“ “ instruction and number of students . . . 164, 165
“ “ equipment . . . 164
“ “ changes and repairs needed . . . 162, 163
“ “ original work in . . . 158–161
“ “ publications . . . 161
College, report on . . . 38–100
“ number of students in . . . 38
“ losses and gains . . . 7, 39–41
“ statistics of admission to . . . 6, 7, 41–52
“ discipline in . . . 7, 52, 53, 96, 97
“ instruction in . . . 53, 54–85, 87
“ seminaries, evening readings, and public lectures . . . 53, 86, 87–90
“ Price Greenleaf beneficiaries . . . 91
“ revision of the regulations . . . 7–10, 91–100
“ degrees with distinction . . . 98, 99
“ proposed abridgment of course for degree of A.B. . . . 10
“ relation to the graduate department . . . 100, 105, 106
Deaths . . . 8, 168, 173
Degrees . . . 200
“ with distinction . . . 10, 98, 99
Dental School . . . 24, 25
“ “ report on . . . 134, 135
“ “ instruction in . . . 134, 135
“ “ gift to, and financial standing of . . . 24, 135
“ “ twentieth anniversary of . . . 24, 135
Divinity School, report on . . . 106–111
“ “ tuition fees in . . . 19, 20
“ “ gain in number of students . . . 18, 106
“ “ new library building . . . 107
“ “ instruction in . . . 108–110

Foxcroft Club 14, 15, 199
Freshmen Advisers, system of adopted 9, 95, 96
Gifts and bequests 10, 11, 15, 16, 111, 124, 154, 155, 163, 173
Gore Hall, addition needed to 27, 28, 150
Graduate Department, report on 100–106
“ “ number of students, ... 100, 101
“ “ degrees and fellowships granted 101, 103
“ “ three new fellowships founded in 16, 104
“ “ impediments to growth of 15, 105, 106
“ “ relation of Academic Council to 105
“ “ separate faculty needed for 106
“ “ statistics of holders of travelling fellowships 16, 17
Herbarium, report on 28, 151–153
“ endowment needed for 29, 156
Intercollegiate athletic contests 11–14
Jefferson Physical Laboratory, report on 31, 32, 165–172
“ “ “ instruction and number of students 165–168
“ “ “ original work 168–171
“ “ “ equipment and financial condition 171, 172
Law School, report on 111–123
“ “ attendance during nineteen years 21, 22, 113
“ “ courses of study 111–113
“ “ Honor degrees conferred 114, 115
“ “ Harvard graduates entering the School 20, 21, 115
“ “ growth of the School 20, 115–123
“ “ average age of students on entering the School 116, 119
“ “ proportion entering directly from college 119
“ “ Harvard Law School association 123
Lawrence Scientific School, report on 136, 137
“ “ “ number of students 136, 137
“ “ “ instruction in 25, 136
“ “ “ engineering courses, equipment needed for 136
“ “ “ advantages and deficiencies of the School 25, 137
“ “ “ courses in architecture and mechanical engineering needed 25, 137
Library, growth and imperative needs of 27, 28, 150
“ report on 140–151
“ publications 140
“ accessions 27, 140, 141, 142
“ department libraries 141
“ use of 142–145
“ cataloguing department 145–147
“ ordering “ 147, 150
“ map “ 150
“ collection of coins 151
Medical School 22, 24
“ “ report on 123–133
“ “ instruction in 124, 126–131
“ “ medical investigations in 124

MEDICAL SCHOOL, number of students 131
“ “ examination statistics 130, 133
“ “ award of scholarships in 131
“ “ need of more scholarships in 23
“ “ relations of the School to hospitals 23, 24
MINERALOGICAL MUSEUM 31, 163
MUSEUM OF COMPARATIVE ZOÖLOGY, report on 181–186
“ “ “ instruction at 181
“ “ “ arrangement of space in 34, 182
“ “ “ accessions 183, 184
“ “ “ publications 184–186
“ “ “ financial condition 186
OBSERVATORY, report on 172–180
“ expeditions to South America and California 32, 173, 176, 177
“ a new building needed for 33, 173
“ employment of instruments 174
“ Henry Draper Memorial 175, 177
“ Boyden Fund 176
“ Bruce photographic telescope 173, 177, 178
“ time signals 178
“ publications 174, 179, 180
Overseers, change in method of election of 4, 198
“ reforms advocated by 7
PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY 35
“ “ report on 186–191
“ “ addition to the Museum 186, 187
“ “ accessions 188, 189, 190
“ “ Serpent Mound 189, 190
“ “ publications 191
“ “ expenditures 191
Preachers to the University 4, 15
“ “ “ “ building needed for 15
Publication Funds 36
“ “ needed in more departments 36
Real estate, enlarged power to hold 4–6, 198
Religious worship, fund to maintain 15
Resignations 3, 4, 24, 135, 192
Semitic Museum needed 20
Students from other colleges, report prepared by 18
Summer courses 32, 35, 36, 165, 168, 181, 182
“ “ in medicine 22, 124
University Museum 29, 33, 34, 155, 163
VETERINARY SCHOOL, report on 138–140
“ “ students in 138, 139
“ “ financial condition of 26, 27, 139, 140
“ “ hospital of 26, 138

TREASURER'S STATEMENT.

SIGILLVM ACADEMIAE HARVARDIANAE IN NOV ANG
CHRISTO ET ECCLESIAE
VE RI TAS

1889.

TREASURER'S STATEMENT.

To the Board of Overseers of Harvard College:—

The Treasurer of the College submits the Annual Statement of the financial affairs of the University, for the year ending July 31, 1889, in the usual form.

The Funds separately invested, with the income thereof, are as follows: —

	Principal. July 31, 1889.	Income.
UNIVERSITY.		
John Cowdin Fund,		
Real Estate in Boston, ...	$22,000.00	$1,628.70
Walter Hastings Fund,		
Real Estate in Cambridge, ...	20,000.00	756.79
COLLEGE.		
Stoughton Scholarship (part of),		
Real Estate in Dorchester, ...	1,294.30	
Pennoyer Scholarships (part of),		
Pennoyer Annuity in England, ...	4,444.44	277.50
Jonathan Phillips Gift,		
Mortgage, ...	10,000.00	500.00
Daniel H. Peirce Fund,		
Mortgage, ...	13,220.50	657.74
Samuel Ward's Gift,		
Ward's (Bumkin) Island, Boston Harbor, . . .	1,200.00	50.00
Scholarships of the **Class of 1856**,		
$10,000 Frem., Elkhorn & Mo. Valley R. R. 6's,	10,000.00	600.00
LIBRARY.		
Charles Minot Fund (part of),		
$60,000 Buffalo, Bradford, & Pittsb. R. R. 7's,	60,000.00	4,200.00
Ichabod Tucker Fund (part of),		
Policy of Mass. Hospital Life Insurance Co., . .	5,000.00	200.00
MUSEUM OF COMPARATIVE ZOÖLOGY.		
Agassiz Memorial Fund (part of),		
Advances for new building, ...	12,781.05	653.21
OBSERVATORY.		
Uriah A. Boyden Fund (part of),		
35 shares East Boston Ferry Co., ...	1.00	
Robert Treat Paine Fund (part of),		
Mortgage (paid off during the year), ...		424.86
Amounts carried forward,	$159,941.29	$9,948.80

Amounts brought forward,	$159,941.29	$9,948.80

SPECIAL FUNDS.

Bussey Trust,		
Real Estate,	413,092.80	21,709.81
Robert Troup Paine Fund (accumulating),		
$30,500 Massachusetts 5's,	34,882.50	1,459.30
Fund of the Class of 1834,		
Policy of Mass. Hospital Life Insurance Co.,	1,000.00	40.00
Fund of the Class of 1853,		
Policy of Mass. Hospital Life Insurance Co.,	2,625.00	105.00
Price Greenleaf Fund.*		
$43,500 Consolidated R. R. of Vermont 5's,	38,280.00	2,175.00
12,200 Rutland R. R. 6's,	12,932.00	732.00
37,200 Rutland R. R. 5's,	34,968.00	1,860.00
1,000 Cheshire R. R. 6's,	1,110.00	60.00
46,500 Ogdens. & L. Champ. R. R. 6's,	46,500.00	2,790.00
23,800 Ogdens. & L. Champ. R. R. income 6's,	10,234.00	
6,000 Ogdens. & L. Champ. R. R. Sinking Fund 8's,	6,360.00	480.00
3,000 Boston & Lowell R. R. 7's,	3,390.00	210.00
31,000 Michigan Central R. R. 8's,	33,480.00	2,480.00
8,000 Michigan Air Line R. R. 8's,	8,560.00	640.00
3,000 Chicago, Burl. & Quincy R. R. 4's,	2,880.00	120.00
4,000 Chicago, Burl. & Northern R. R. 5's,	4,000.00	200.00
23,000 Union Pacific Railway 6's,	25,990.00	1,380.00
6,000 Union Pacific Railway Land Grants 7's (paid off during the year),		315.00
290 shares Northern R. R. (N. H.),	36,540.00	2,610.00
73 " Cheshire R. R. Preferred,	8,614.00	438.00
800 " Rutland " "	28,000.00	1,200.00
40 " Ogdens. & L. Champ. R. R.,	680.00	
208 " Boston & Maine "	43,056.00	1,664.00
95 " Eastern "	11,400.00	
360 " Boston & Lowell "	46,800.00	2,520.00
140 " Fitchburg (Preferred) "	14,175.00	
355 " Old Colony "	63,190.00	2,485.00
142 " Chicago, Burl. & Quincy R. R.,	19,312.00	568.00
24 " Chicago, Burl. & Northern "	1,968.00	
20 " N.Y. Central & Hudson River "	2,260.00	80.00
292 " Michigan Central "	28,032.00	1,168.00
122 " Union Pacific Railway Co.,	7,320.00	
52 " West End Street Railway Co.,	4,330.00	208.00
500 " Bost. & Pr. R. R. (sold during the year),		2,500.00
50,000 Metropolitan Tel. & Tel. Co. 1st M. 5's,	49,979.17	
Mass. Cotton Mills' Notes (paid during the year),		425.00
United States Hotel Co.'s Notes,	86,000.00	
Mortgages,	11,500.00	640.00
Deposit with New England Trust Co.,	24,287.77	861.65
Check for deposit with New England Trust Co.,	6,563.77	
Totals,	$1,334,233.30	$64,072.56

---

* The will of Mr. Greenleaf forbids the sale of any of his railroad bonds or stocks.

The other Funds are invested as a whole. The general investments are stated in detail on pages 20 and 21 of this report, but the usual summary statement of them, with the income thereof, is as follows: —

Investments.	Principal, August 1, 1888.	Principal, July 31, 1889.	Income.
Notes, Mortgages, &c., ...	$690,345.27	$480,279.50	$31,484.49
Railroad Bonds and Premiums, . .	2.504,154.79	2,569,377.29	127,981.35
Railroad Stock, ...	387,515.33	387,515.33	16,835.00
Union Stock Yard & Transit Co., . .		28,062.50	625.00
Metropolitan Tel. & Tel. Co. 1st M. 5s,		99,500.00	
Bank Stock, ...	63,964.00	63,964.00	4,515.77
Manufacturing Stock, ...	96,262.29	96,262.29	9,672.00
Real Estate, ...	1,415,292.74	1,425,957.44	76,211.74
Unimproved Lands, ...	71,705.04	71,606.29	
Brattle Street Reversion, ...	1,000.00	1,000.00	
Advances to Dental School, ...	5,111.67	2,216.40	306.70
" " Bussey Trust, ...	40,266.13	40,266.13	2,013.30
" " Dining Hall Association,	27,232.16	25,732.16	1,633.93
" " University Lands, . . .		38,930.36	909.78
" " Observatory, Real Estate,	2,016.04	1,616.84	100.80
" " Lawn Tennis Association,	400.00	250.00	24.00
" " School of Veterinary Medicine, ...	17,113.27	17,237.19	1,026.79
Baring Brothers & Company, . . .	7,025.72	744.83	118.84
Term Bills due in October, ...	97,491.12	99,646.40	
Term Bills overdue, ...	2,147.22	2,136.48	
Cash in Suffolk National Bank, .	19,279.75	75,302.13	
Cash in hands of Bursar, ...	13,601.06	12,209.39	
Totals of general investments,	$5,461,923.60	$5,539,812.95	$273,459.49
Totals of special investments,	1,300,019.63	1.334,233.30	64,072.56
Amounts, ...	$6,761,943.23	$6,874,046.25	$337,532.05

During the year the limitation upon investments by the College in productive real estate has been wholly removed, as to such real estate in Massachusetts, by an Act of the Legislature passed in March last.

No important changes in the general investments have been made during the year, except that $150,000 of Ionia & Lansing R. R. 1st Mortgage 8's of 1889, of which the average cost to the College was less than par, became due in July, and the money was reinvested in Chicago, Burlington & Quincy R. R. 7's of 1903, at a price upon which they will yield to maturity but little over four per cent. Moderate charges have been made to a new account called "Advances for University lands;" the Corporation having voted that "a fair rate of interest on the amount of such advances shall be annually paid out of the unrestricted income of the University until such time as the principal sums can be repaid to the general investment account." The French Rentes, held as a special investment for the Rumford Professorship Fund, have been sold at a gain of $3444.88 over their original valuation, and that sum has been credited to the Fund. The Boston & Providence R. R. Stock, which was bought last year as a temporary investment for the Price Greenleaf Fund, has been sold at a profit of $11,250; and that sum has been credited to the Fund.

The net income of the general investments ($273,459.49) has been divided at the rate of $5\frac{11}{100}$ per cent among the Funds to which they belong, after allowing to the Carey Building Fund and the Botanical Building Fund a special rate of four per cent on their balances during the period of construction, and to the more recent Construction Funds a special rate of three per cent. The fraction, which was $149.12, has been placed as usual to the credit of the University account.

The rate of income compared with that for 1887–88 shows a gain of eleven one hundredths of one per cent. This gain has been due to temporary causes, and it is not probable that the annual rate will hereafter be as high as five per cent. The surrender at maturity of the eight per cent bonds of the Ionia & Lansing R. R. is equivalent to a sudden fall of about one tenth of one per cent in the yearly rate of income for all the Funds sharing in the general investments. Moreover, since the close of the financial year, the reorganization of the Atchison, Topeka & Santa Fé R. R. has obliged the College to part with its large holding of the best securities of that system. Although no capital has been lost by the investment of the College in these securities, the necessity for selling out bonds having many years to run at high rates of interest and reinvesting in safer bonds at present prices, is equivalent to a fall of more than one tenth of one per cent in the yearly rate of income for all the Funds sharing in the general investments.

The following table shows the income available for the departments dependent upon the College proper, ahd the expenditures in those departments: —

Interest on funds for			
University Salaries and Expenses,		$30,362.50	
Library Salaries and Expenses (not books),		21,887.73	
College Salaries and Expenses,		37,623,14	
Gymnasium, and repairs on College buildings,		none.	
College Term Bills,		215,934.36	
Sundry receipts, as follows: —			
Gifts for Salaries,	$950.00		
Use of rooms, etc.,	1,030.01		
Laboratory fees, etc.,	11.720.82		
Repayments for printing, sales, etc.,	9,459.91		
		23,160.74	
			$328,968.47
Expended for			
University Salaries and Expenses,		$41,602.20	
Library Salaries and Expenses (not books),		30,429.70	
College Expenses,		59,548.63	
College Salaries, for instruction,		171,563.20	
Gymnasium Expenses,		10,352.77	
Repairs and insurance on College buildings not valued on Treasurer's books,		15,381.41	
			328,877.91
Balance, which has been carried to Stock Account, to repay in part former deficits,			$90.56

For the University, College, and Library accounts there has been an increase of income, chiefly from tuition fees and from the Gurney and the William Perkins Funds. Greater outlays have, however, been necessary upon instruction and upon repairs and improvements. For the year there has been a surplus of $90.56, after adding the income of the Stock Account to its capital to make good in part former deficits. For 1887–88 the surplus was $3130.05.

The Divinity School has had a deficit of $726.12, due to a large increase of expenditure for its library and for repairs and improvements. For 1887–88 there was a surplus of $636.53.

For the Law School there has been a surplus of $6525.86, in spite of increased outlays upon instruction. For 1887–88 the surplus was $8291.19.

For the Medical School there has been a nominal surplus of $1279.91, of which $1245 was due to instructors in the summer courses. The actual surplus was only $34.91, after setting apart the new "subscriptions to raise the standard of medical education," from which the sum of $9750 was received during the year. For 1887–88 the surplus was $157.43.

The Dental School, owing to largely increased receipts from its Infirmary and Laboratory and from tuition-fees, has had a surplus of $2895.27, which has been used to reduce the debt of the School. For 1887–88 the surplus of $1489.76 was used in like manner.

For the Lawrence Scientific School a decided increase in the number of students has left a surplus of $997.62, after providing for increased expenditure. For 1887–88 the surplus was $214.19.

The Museum of Comparative Zoölogy has spent all the income of its restricted Funds as required by the conditions of gift, and has used the surplus income of the Agassiz Memorial Fund as heretofore to pay interest upon, and to repay in part the principal of the advances to the Memorial Fund to extend the Museum building.

For the general account of the Observatory a largely increased expenditure has caused a deficit of $1837.11. For 1887–88 there was a surplus of $3242.91. The special outlays from the Boyden Fund and from the Draper Memorial have also been large; in the former case a part having been paid out of capital, as authorised by Mr. Boyden's will.

For the Bussey Institution there has been a surplus of $1639.91, in spite of greater outlays. For 1887–88 the surplus was $3169.97.

The Veterinary School has had a deficit of $123.92, in spite of increased receipts from its Hospital and Forge, and from annual subscriptions. For 1887–88 the deficit was $1576.12.

Gifts have been received during the year as follows: —

GIFTS TO FORM NEW FUNDS OR INCREASE OLD ONES.

From Edward Russell, $200, to increase the Scholarship founded by him.

Through Dr. Henry I. Bowditch, Treasurer of the Class of 1828, $1190.43, to be added to the Scholarship Fund of the Class of 1828.

Through Francis H. Lincoln, Secretary of the Class of 1867, $12.50, to be added to the Scholarship Fund of the Class of 1867.

From Professor David Williams Cheever, $5000, to found a Scholarship in the Medical School.

By the unrestricted bequest of Stanton Blake, $5000.

From William Story Bullard, $30,000, to found "three Fellowships of $10,000 each, in grateful and affectionate remembrance of three friends," one in memory of Henry Lee, one in memory of Ozias Goodwin, and one in memory of Henry Bromfield Rogers.

From the estate of Increase Sumner Wheeler, $50,000, from which "so much of the income as shall be needful shall be applied to the support of religious worship on Sundays and other days as the President and Fellows shall deem requisite for the purpose, and any surplus of income not so applied shall be added to the principal of the fund, or used in such manner as the President and Fellows shall deem most advantageous for the purposes of the College."

From the estate of E. Price Greenleaf, the additional sum of $21,563.77, as the final payment on account of the Price Greenleaf Fund.

From the estate of Ellen Gurney, the additional sum of $11,381.14 as the final payment on account of the Gurney Fund.

From the estate of Samuel E. Fitz, $10, as the final payment on account of his residuary bequest for the Medical School.

From the estate of Robert Treat Paine, $1824.26, as the final payment on account of that portion of Mr. Paine's estate which is now available for the uses of the Observatory.

From Miss Anna C. Lowell, $1000, to be added to the Lowell Fund for a Botanic Garden.

From an anonymous friend, $6000, to be added to the Dental School endowment.

From Henry Villard, the third instalment of $5000, on account of his subscription towards the Law School Book Fund.

From William Gray, trustee, $6527.79, as the unexpended balance of the Fund for lectures at Cambridge on the practical affairs of business, the mutual relations of capital and labor, and the development of national resources.

From the estate of Samuel Greeley Clarke of the Class of 1851, $505.60, to repay with interest the money received by Mr. Clarke while in College from Scholarship and Beneficiary Funds.

From Samuel S. Greeley of Chicago, $500, on account of repayment of money received by his son, Louis M. Greeley (A.B. 1880), while in College from the income of Scholarship Funds.

The total amount of these gifts for capital account is $145.715.59, as is also stated on page 18 of this report.

GIFTS FOR IMMEDIATE USE.

From George W. Wales, $200, for books for the Library, in continuance of former gifts for the same purpose.

From an anonymous friend, his annual gift of $500, to increase the salary of the Professor of Entomology.

From Mrs. Henry Draper of New York, an additional sum of $6500, to be expended by the Director of the Observatory in prosecuting the researches in the photography of stellar spectra, with which the late Dr. Henry Draper's name is honorably associated.

From John Lowell, on behalf of himself and Mrs. Lowell, $400, as the fourth yearly payment for the support of two Scholarships to be known as the George Emerson Lowell Scholarships.

From the Dante Society, the additional sum of $100, for the purchase of books on Dante.

From Mrs. C. M. Barnard, $600, as her annual gift for the Warren H. Cudworth Scholarships.

From Professor W. G. Farlow, his annual gift of $450, towards the salary of the Assistant in the Cryptogamic Herbarium.

From Colonel Theodore A. Dodge, $25 additional, for current use at the Veterinary Department.

From John O. Sargent, one $100 prize, for the best version of the fourth Ode of the third Book of Horace, in continuance of former gifts for a like purpose.

From Robert N. Toppan, $150, to be used as a prize on Political Science in the graduate department of the University, in continuance of former gifts for the same purpose.

From the trustees under the will of Samuel Johnston, $10,000, for the erection of a gate-way at the main entrance of the College yard.

Subscriptions towards Professor Cooke's addition to the University Museum, paid to August 1, 1889, from

Frederick L. Ames	$2,000	Professor Josiah P. Cooke	$2,000
Francis Bartlett	5,000	Miss Anne Wigglesworth	2,000
Martin Brimmer	2,000		$13,000

Additional subscriptions towards building and furnishing an addition to the University Museum for the Botanic Department, paid to Aug. 1, 1889, from

An anonymous friend	$1,000	H. H. Hunnewell	$10,000
Frederick L. Ames	10,000	Nathaniel Thayer	5,000
Mrs. Mary Hemenway	1,000		$27,000

Subscriptions to raise the standard of Medical Education, paid to August 1, 1889, from

Frederick L. Ames	$1,000	H. H. Hunnewell	$1,000
Edward Austin	1,000	Asa P. Potter	250
John L. Bremer	1,000	E. V. R. Thayer	500
T. O. H. P. Burnham	500	John E. Thayer	500
William Endicott, jr.	1,000	Nathaniel Thayer	1,000
John L. Gardner	1,000	Miss Anne Wigglesworth	500
Augustus Hemenway	500		$9,750

Subscriptions from graduates of the Dental School, to be applied towards the immediate wants of the School, paid to Aug. 1, 1889, from

Dr. Charles H. Abbot	$25	Dr. P. B. Laskey	$5
Dr. C. A. Brackett	50	Dr. Frank Perrin	10
Dr. Edwin P. Bradbury	25	Dr. William H. Potter	5
Dr. Thomas Fillebrown	20	Dr. James Shepherd	5
Dr. H. W. Gillett	5	Dr. Charles Wilson	10
			$160

From George W. Hammond, $100, for the purchase of specimens for the Botanical Museum.

Through Professor Goodale, $2000, an anonymous gift for the present use of the Botanic Department.

From Mrs. Asa Gray, Charles J. Sprague, and Sereno Watson, $25 each, towards expenses for alteration of cases in the Herbarium.

From Mrs. Asa Gray, for present use of the Herbarium, $55.65.

Through Professor W. E. Byerly, $200, for the purchase of books for the Mathematical Department.

Through Assistant Professor Adolphe Cohn, $25, for the purchase of books for the French Department.

From Henry Villard, $500, for the purchase of books for the German Department.

Through Carleton Hunneman, $195.50, for the purchase of books for the German Department.

In memory of Glendower Evans, of the Class of 1879, $500, to found a Class room library in the "Ethics of the Social Questions."

From Mrs. Ezra Abbot, book-cases sold for $10.

From the Harvard Law School Association, $500, for the purpose of increasing the instruction in Constitutional Law during the year 1889–90.

From Professor William A. Rogers, the balance of his subscription towards the salary of an Assistant in the Observatory, $25.

From an anonymous friend, $100, for a new boiler for the greenhouse at the Bussey Institution.

From Miss Catherine W. Bruce of New York, $50,000 for the construction and use of a photographic telescope.

The total amount of these gifts for immediate use is $123,221.15, as is also stated on page 16 of this report.

OTHER GIFTS ACKNOWLEDGED BY THE CORPORATION.

From Miss Ellen Mason, six Babylonian clay tablets.

From Francis Blake, a Brown & Sharpe milling-machine costing $600, to the Jefferson Physical Laboratory.

From a Committee of Subscribers, a portrait of E. Rockwood Hoar.

From Mrs. R. H. Eddy, a crayon portrait of the late Francis E. Parker, to be placed in Austin Hall.

From Miss Lucy Ellis, a portrait of the late Dr. Calvin Ellis, for the Medical School.

From Denman W. Ross, a collection of books on early institutions, amounting to four hundred and eighty one volumes, for the College Library.

By the bequest of Charles Dudley March, books, engravings, etc.

From Instructor John C. Wait, a plan of the grounds of the Observatory and the Botanic Garden.

From the Boston Society for Medical Improvement, the cabinet of the Society, for the Medical School.

From T. Jefferson Coolidge, a marble bust of himself with its pedestal, for the Jefferson Physical Laboratory.

From J. C. Bancroft Davis, his set of the original papers on the Alabama Claims, consisting of forty-three volumes, chiefly in folio.

Through Archbishop Williams from the Vatican, books for the College Library.

Notice was received from Dr. Benjamin E. Cotting, of the Class of 1834, stating that he had deposited with the Massachusetts Hospital Life Insurance Company the sum of $3000, the principal to be paid to the President and Fellows of Harvard College, for the use of the Medical School as the Cotting Gift, upon the death of one annuitant.

Arthur H. Olmsted, a clerk in the Bursar's office at Cambridge, having fled to Canada, on Aug. 2, 1888, after stealing money from the College to the amount of $1391.26, an anonymous friend of the College, who had no responsibility for him, made good the amount of the theft.

An offer was received from Dr. Henry F. Sears to give the sum of $35,000 for an addition to the Medical School building for the departments of Pathology and Bacteriology, but the plans were not decided upon in time for the College to receive the money until after the close of the financial year.

EDWARD W. HOOPER, *Treasurer.*

BOSTON, December 23, 1889.

General Statement of Receipts and Disbursemen
for the year endin

INCOME.

Interest on notes, mortgages, and advances, ...		$40,919.4
" " Massachusetts 5's, ...		1,459.
" " Policies Mass. Hospital Life Insurance Co., ...		345.
" " Deposit with New England Trust Co.		861.
" " Railroad Bonds (after deductions for sinking premiums).		
Atchison, Topeka & St. Fé 7's, . . .	$11,100.00	
Buffalo, Bradford & Pittsburg 7's, . .	4,200.00	
Burlington & Mo. River in Neb. 6's, .	16,261.75	
Atchison & Nebraska 7's, ...	9,000.00	
Marion & McPherson 7's, ...	9,000.00	
Ionia & Lansing 8's, ...	12,000.00	
Kan. City, St. Jos. & Council Bluffs 7's,	8,000.00	
Kansas City, Topeka & Western 7's, .	6,480.00	
Fort Scott, So. E. & Memphis 7's, . .	6,825.00	
Kansas City & Cameron 10's, ...	9,000.00	
Lincoln & No. Western 7's, ...	1,500.00	
Eastern Railroad sterling 6's, ...	3,564.60	
Fremont, Elkhorn & Mo. Valley 6's, .	600.00	
Chicago, Burlington & Quincy 4's, . .	120.00	
Eastern Railroad 6's, ...	19,650.00	
Consolidated R. R. of Vermont 5's, .	2,175.00	
Rutland Railroad 6's, ...	732.00	
Rutland Railroad 5's, ...	1,860.00	
Cheshire Railroad 6's, ...	60.00	
Michigan Central 8's, ...	2,480.00	
Michigan Air Line 8's, ...	640.00	
Union Pacific 6's, ...	1,380.00	
Hannibal & St. Joseph 6's, ...	12,000.00	
Chicago, Burlington & Quincy 5's, . .	3,000.00	
Kansas City, Ft. Scott & Gulf 7's, . .	1,980.00	
Dixon, Peoria & Hannibal 8's, ...	320.00	
Chicago & Michigan Lake Shore 8's, .	840.00	
Ogdens. & Lake Champlain 6's, . . .	2,790.00	
Ogdens. & Lake Champlain 8's, . . .	480.00	
Boston & Lowell 7's, ...	210.00	
Chicago, Burlington & Northern 5's, .	200.00	
Union Pacific 7's, ...	315.00	
St. Paul, Minneapolis & Manitoba 5's,	2,460.00	
		146,223.3
Dividends on Stocks.		
Charles River National Bank, ...	480.00	
First (Cambridge) " "	425.00	
Fitchburg " "	144.00	
Massachusetts " "	120.00	
Merchants " "	1,584.00	
New England " "	259.00	
Old Boston " "	550.00	
Bank taxes refunded, ...	953.77	4,515.7
Amount carried forward, ...		$194,324.5

by the Treasurer of Harvard College,
July 31, 1889.

EXPENSES.

Paid to account of Expenses in the

University, as per Table I. (page 38).		
Fellowships,	$10,700.00	
Prizes,	250.00	
Salaries and other expenses,	41,602.20	
		52,552.20
College, as per Table II. (page 40).		
Salaries for instruction,	$171,563.20	
Repairs and Insurance on College Edifices, not valued on Treasurer's books,	15,381.41	
General Expenses,	59,545.17	
Scholarships,	29,491.46	
Beneficiaries,	16,763.46	
Prizes,	971.53	
Botanic Garden,	7,668.95	
Herbarium,	4,496.23	
Hemenway Gymnasium,	10,352.77	
Jefferson Physical Laboratory,	5,295.27	
Quarterly Journal of Economics,	840.62	
Account of new Botanical Building,	43,055.26	
Books for special departments,	670.04	
Repairing and photographing **Stoughton** monument,	11.88	
		366,107.25
Library, as per Table III. (page 46).		
Books,	17,339.58	
Salaries and other expenses,	30,429.70	
		47,769.28
Divinity School, as per Table IV. (page 48).		
Salaries and other expenses,	25,611.13	
Scholarships and Beneficiaries,	1,902.50	
		27,513.63
Law School, as per Table V. (page 50),		38,851.27
Medical School, as per Table VI. (page 51),		68,032.71
Dental School, as per Table VII. (page 53),		7,671.64
Lawrence Scientific School, as per Table VIII. (page 53).		
Salaries and other expenses,	13,423.80	
Museum of Comparative Zoölogy,	29,551.31	
		42,975.11
Amount carried forward		$651,473.09

General Statement of Receipts and Disbursements for the year ending

INCOME.

Amount brought forward, ...		$194,324.51
Dividends on Stocks.		
Amoskeag Manufacturing Co., . . .	$1,200.00	
Amory " " . . .	216.00	
Massachusetts " " . . .	560.00	
Merrimack " " . . .	1,360.00	
Nashua " " . . .	1,800.00	
Stark Mills, ...	960.00	
Wamsutta Mills, ...	576.00	
Pacific Mills, ...	3,000.00	
		9,672.00
Chicago, Burlington & Quincy R. R., .	5,772.00	
Pittsfield & North Adams R. R., . . .	315.00	
Eastern R. R., preferred, ...	11,316.00	
Cheshire R. R., preferred, ...	438.00	
Rutland R. R., preferred, ...	1,200.00	
Boston & Maine R. R., ...	1,664.00	
Old Colony R. R., ...	2,485.00	
New York Cent. & Hud. River R. R.,	80.00	
Michigan Central R. R., ...	1,168.00	
Boston & Lowell R. R., ...	2,520.00	
Boston & Providence R. R., ...	2,500.00	
Northern R. R. (N. H.), ...	2,610.00	
West End Street Railway Co., ...	208.00	
Union Stock Yard & Transit Co., . . .	625.00	
		32,901.00
Real Estate, from rents, &c. (gross receipts).		
Cambridge (Houses and Lands), ...	$36,588.82	
Boston (general investments), ...	83,854.15	
Bussey real estate, ...	35,302.32	
Sundry estates, ...	10,418.75	
		166,164.04
Term Bills.		
College, as per Table II., ...	215,934.36	
Divinity School, as per Table IV., ...	4,657.20	
Law School, as per Table V., ...	31,150.00	
Medical School, as per Table VI., ...	53,141.48	
Dental School, as per Table VII., ...	6,250.00	
Lawrence Scientific School, as per Table VIII.,	5,140.68	
Bussey Institution, as per Table X., ...	475.00	
School of Veterinary Medicine, as per Table X.,	2,352.19	
		324,100.91
Sundries.		
From **Wm. Pennoyer** Annuity, ...	$277.50	
" Professor **Gray's** copyrights, ...	2,205.59	
" Trustees of **Thayer** Scholarships, ...	3,500.00	
" " **Edward Hopkins**, ...	228.44	
For use of Library by resident graduates and others,	175.00	
Amounts carried forward, ...	$6,386.53	$727,162.46

by the Treasurer of Harvard College,
July 31, 1889.

EXPENSES.

Amount brought forward, ...			$651,473.09
Observatory, as per Table IX. (page 54), ...			54,684.01
Bussey Institution, as per Table X. (page 55),		$9,755.66	
School of Veter'y Medicine, as per Table X. (page 55),		17,162.19	
Arnold Arboretum, as per Table X. (page 55),		9,107.78	
			36,025.63
Real Estate, expenses.			
Insurance.			
Cambridge, ...	$1,963.05		
Boston (general investments), . .	1,870.01		
Bussey real estate, ...	1,068.70		
		4,901.76	
Taxes.			
Cambridge, ...	2,476.42		
Boston (general investments), . .	14,168.80		
Bussey real estate, ...	7,145.82		
Sundry estates, ...	579.55		
		24,365.59	
Interest.			
Bussey real estate (on advances), ...		2,013.30	
Repairs, improvements, care, cleaning and sundries.			
Cambridge, ...	14,263.71		
Boston (general investments), . .	10,400.10		
Bussey real estate, ...	1,022.24		
Sundry estates, ...	63.14		
		25,749.19	
Heating and hoisting for **Bussey** stores, including repairs and renewal of apparatus, ...	4,897.45		
Less for sales of heat and power, .	2,555.00		
		2,342.45	
			59,872.29
Annuities.			
Bussey, ...		6,300.00	
Gore, ...		600.00	
Lucy Osgood, ...		420.00	
Class of 1802, ...		120.00	
Bemis, ...		2,544.28	
Gurney, ...		1,000.00	
			10,984.28
Amount carried forward, ...			$812,539.30

INCOME.

Amounts brought forward, . . .		$6,386.53	$727,162.46
Sundries.			
Printing by College Press for other departments,		6,272.62	
Sale of grass, wood, and old material, ...		2,897.07	
" " old examination papers, ...		70.96	
" " time signals from Observatory, ...		3,148.33	
" " tickets to Commencement Dinner, ...		521.00	
" " books, pamphlets, catalogues, &c., ...		1,252.76	
Subscriptions to Veterinary Hospital, ...		1,930.00	
Board of horses, cattle, &c. at Bussey Institution,		1,606.78	
Repayment of sundry advances, ...		489.20	
Laboratory instruction to Dental and Veterinary students, ...		290.00	
Proportion of expenses of Gymnasium repaid by other departments, ...		1,566.32	
Use of lockers at Gymnasium, ...		2,128.00	
Fee for use of Gymnasium, ...		10.00	
Fees for admission examinations, &c., ...		814.00	
Examination fee for the degree of S.D., ...		30.00	
Fees in Infirmary and Laboratory, Dental School,		3,961.55	
Fees from Veterinary Hospital and Forge, ...		12,731.08	
Balance of fees for Summer Courses, ...		244.29	
Laboratory fees: Chemical	$5,672.01		
Laboratory fees: Physical	1,268.77		
Laboratory fees: Natural History	1,378.75		
		8,319.53	
			54,620.02
Sundry gifts for immediate use, see page 10, ...			123,221.15
Total amount of income, ...			$905,003.63

RECEIPTS EXCLUSIVE OF INCOME.

GIFTS.

Edward Russell Scholarship (additional), ...	$200.00	
Subscription for endowment of Dental School (additional), ...	6,000.00	
Price Greenleaf Fund (additional), ...	21,563.77	
Gurney Fund "	11,381.14	
Class of 1828 Scholarship, "	1,190.43	
" " **1867** " "	12.50	
Lowell Fund for a Botanic Garden (additional), . .	1,000.00	
Law School Book Fund " . .	5,000.00	
Samuel E. Fitz Fund " . .	10.00	
Robert Treat Paine Fund " . .	1,824.36	
Increase S. Wheeler Fund, ...	50,000.00	
David Williams Cheever Scholarship, ...	5,000.00	
Amounts carried forward,	$103,182.20	$905,003.63

by the Treasurer of Harvard College,
July 31, 1889.

EXPENSES.

Amount brought forward, . .		$812,539.30
Class Funds.		
Paid the Secretary of the **Class of 1834**, . . .	$40.00	
" " " " **1853**, . . .	105.00	
		145.00
Walter Hastings Building Fund.		
Paid on account of the erection of **Walter Hastings** Hall, ...		135,572.87
Sundry payments from income.		
To the Treasurer of the Museum of Fine Arts, from **Gray** Fund for Engravings, ...	798.90	
The income of the **Daniel Williams** Fund for the benefit of the Herring Pond and Mashpee Indians,	802.00	
The income of the **Sarah Winslow** Fund, to the Minister and Teacher at Tyngsboro', Mass., . .	234.54	
		1,835.44

INVESTMENTS AND SUNDRY PAYMENTS.

Burl. & Mo. River (Neb.) R. R. 6's,	$4,000 cost,	$4,238.75	
Chic. Burl. & Quincy R. R. 7's,	300,000 "	390,000.00	
Union Pacific R'y Omaha Bridge 5's,	100,000 "	103,000.00	
Metropolitan Tel. & Tel. Co. 5's, . .	100,000 "	99,500.00	
Massachusetts 5's, 1894 (**Paine** Fund)	2,000 "	2,220.00	
Paid for accrued interest and expenses on the above bonds, ...		468.95	
			599,427.70
$50,000, Metropolitan Telephone & Telegraph Co. 5's, for the **Price Greenleaf** Fund, costing with accrued interest, ...		49,979.17	
2 shares Lowell Machine Shop, received as a portion of the **Price Greenleaf** Fund, ...		1,630.00	
			51,609.17
250 shares Union Stock Yard & Transit Co., . . .			28,062.50
Purchase of Foxcroft Estate, Cambridge, ...		23,275.21	
" " land on Oxford St., "		15,655.15	
			38,930.36
Improvements on Andrews Estate, ...			10,489.16
Amount carried forward, ...			$1,678,611.50

General Statement of Receipts and Disbursements for the year ending

RECEIPTS EXCLUSIVE OF INCOME.

Amounts brought forward,	$103,182.20	$905,003.63
GIFTS.		
William Story Bullard's gift for Memorial Fellowships,	30,000.00	
Stanton Blake Fund,	5,000.00	
Lectures on Political Economy Fund,	6,527.79	
Scholarship and Beneficiary money returned,	1,005.60	
		145,715.59
SALES.		
$9,000 Burl. & Mo. R. (Neb.) R. R. 6's (paid off),	9,000.00	
3,000 Ft. Scott, So. E. & Memp. R. R. 7's "	3,150.00	
6,000 Union Pacific R. R. Land Grant 7's "	6,000.00	
150,000 Ionia & Lansing R. R. 8's,	150,000.00	
200,000 Hann. & St. Joseph R. R. 6's,	244,250.00	
4,000 Dixon, Peoria & Hann. R. R. 8's,	4,000.00	
500 shares Boston & Providence R. R. stock,	125,000.00	
2 " Lowell Machine Shop,	1,630.00	
Rights Chic., Burl. & Northern R. R.,	13.20	
Balance of sale of French Rentes,	7,947.77	
		550,990.97
SUNDRIES.		
From Dining Hall Association, to reduce debt,		1,500.00
" Lawn Tennis Assoc., on account of loan repaid,		150.00
Advances to premiums, on $1,759,050 R.R. B., repaid,		22,090.00
" " accrued interest and expenses on Bonds repaid,		93.95
Notes and mortgages paid off,	657,000.00	
Less invested in notes of Manufacturing and other companies,	526,000.00	
		131,000.00
Drafts on Baring Brothers & Co.,	14,769.89	
Less paid Baring Brothers & Co. in account,	8,489.00	
		6,280.89
Balance, August 1, 1888.		
Cash in Suffolk National Bank,	$19,279.75	
Cash in New England Trust Co.,	9,253.74	
Check for deposit in New England Trust Co.,	5,000.00	
Cash in hands of Charles F. Mason, Bursar,	13,601.06	
Term Bills due October, 1888,	97,491.12	
" " overdue,	2,147.22	
		146,772.89
Total,		$1,909,597.92

by the Treasurer of Harvard College,
July 31, 1889.

INVESTMENTS AND SUNDRY PAYMENTS.

Amount brought forward, . . .		$1,678,611.
Paid on account of the extension of the Natural History Laboratories, ...	15,213.47	
Less amount repaid by Museum of Comparative Zoölogy, ...	4,489.65	10,723.82
Unused balance of Thayer Scholarships returned to Trustee, ...		116.66

Balance, July 31, 1889.

Cash in Suffolk National Bank, ...	$75,302.13	
Cash in New England Trust Co., ...	24,287.77	
Check for deposit in New England Trust Co., .	6,563.77	
Cash in hands of Charles F. Mason, Bursar, . .	12,209.39	
Term Bills due October, 1889, ...	99,646.40	
" " overdue, ...	2,136.48	220,145.94
Total, ...		$1,909,597.92

The following Account exhibits the State of the Property, entered upon the Treasurer's Books, July 31, 1889.

Separate Investments, as stated in detail on pages 1 and 2 of this report, consisting of				
Mortgages and Notes,			$120,720.50	
Railroad Bonds,			298,684.00	
Sundry Bonds,			84,861.67	
Railroad Stocks,			315,677.00	
Real Estate,			457,587.10	
Sundries,			56,703.03	
Amounting to				$1,334,2
And "General Investments" as follows: —				
Mortgages and Notes.				
Mortgages,			65,279.50	
Long Wharf Co.'s Note,			5,000.00	
Boott Cotton Mills' Notes,			60,000.00	
Amoskeag Manufacturing Co.'s Notes,			210,000.00	
Pacific Mills' Notes,			100,000.00	
Boston Manufacturing Co.'s Note,			40,000.00	
				480,2
Metropolitan Tel. & Tel. Co. 1st M. 5's,	100,000	valued at		99,5
Railroad Bonds.				
Burl. & Mo. R. in Nebr. non ex. 6's,	320,000	val'd at	320,000.00	
Kan. City, St. Jos. & C.B., 1st M. 7's,	50,000	" "	50,000.00	
Lincoln & No. West., 1st M. 7's,	25,000	" "	25,000.00	
Kan. City & Camer., 1st M. 10's,	150,000	" "	150,000.00	
Atchison & Nebraska, 1st M. 7's,	150,000	" "	150,000.00	
Atch., Top. & St. Fé, 1st M. 7's,	185,000	" "	185,000.00	
Kan. City, Top. & West., 1st M. 7's,	108,000	" "	108,000.00	
Marion & McPherson, 1st M. 7's,	150,000	" "	150,000.00	
Ft. Scott, So. E. & Mem., 1st M. 7's,	112,000	" "	112,000.00	
Eastern, 1st Mortg. 6's,	393,000	" "	393,000.00	
Eastern, " " " Sterling,	£14,600	" "	71,050.90	
Chicago, Burl. & Qu. Consol. 7's,	300,000	" "	300,000.00	
Chicago, Burl. & Quincy 5's,	60,000	" "	60,000.00	
St. Paul, Minn. & Manitoba 5's,	100,000	" "	91,562.50	
Kan. C., Ft. Scott & G'lf 1st M. 7's,	33,000	" "	33,000.00	
Chic. & Mich. Lake Sh. 1st M. 8's,	12,000	" "	12,000.00	
U. P. Omaha Bridge 1st M. 5's,	100,000	" "	100,000.00	
Railroad Bond Premiums,			258,763.89	
				2,569,3
Manufacturing Stock.				
Amory,	36	shares,	$3,600.00	
Amoskeag,	12	"	3,654.00	
Massachusetts Mills,	7	"	6,600.00	
Merrimack,	17	"	17,000.00	
Nashua,	36	"	25,560.00	
Pacific Mills,	20	"	17,468.29	
Amounts carried forward,			$73,882.29	$4,483,3

Amounts brought forward, ...		$73,882.29	$4,483,390.09
Stark Mills, ...	12 shares,	11,900.00	
Wamsutta Mills, ...	96 "	10,480.00	
			96,262.29
Bank Stock.			
Charles River, ...	60 shares,	6,000.00	
First Cambridge, ...	50 "	5,000.00	
Fitchburg, ...	24 "	2,403.00	
Massachusetts, ...	12 "	3,000.00	
Merchants, ...	264 "	34,732.00	
New England, ...	37 "	3,896.00	
Old Boston, ...	100 "	8,933.00	
			63,964.00
Sundry Stocks.			
Chicago, Burlington & Quincy,	1,301 shares,	136,035.33	
Pittsfield & North Adams,. . .	63 "	6,300.00	
Eastern, preferred, ...	1,886 "	245,180.00	
Union Stock Yard & Transit Co.,	250 "	28,062.50	
			415,577.83
Real Estate.			
Houses and Lands in Cambridge yielding income,		353,585.06	
Unimproved Lands in Cambridge, ...		71,606.29	
Amory Estate, Franklin Street, Boston, . . .		165,615.81	
Webb Estate, Washington Street, Boston, . .		164,604.79	
Andrews Estate, Washington Street, Boston, .		165,562.00	
Gray Estate, Washington Street, Boston, . . .		487,119.12	
Estate on Hawley Street, Boston, ...		38,650.78	
Estate on Hawkins Street, Boston, ...		29,476.09	
Reversion of Buildings on Brattle Street, Boston,		1,000.00	
Estate on Townsend Street, Roxbury, ...		10,854.63	
Improvements on Gray and Andrews Estates, .		10,489.16	
			1,498,563.73
Sundries.			
Due from Dining Hall Association, ...		25,732.16	
" " Bussey Trust, ...		40,266.13	
" " Dental School, ...		2,216.40	
" " School of Veterinary Medicine, . . .		17,237.19	
" " Lawn Tennis Association, ...		250.00	
Advances to Observatory real estate, ...		1,616.84	
" " University Lands, ...		38,930.36	
Baring Brothers & Co., ...		744.83	
Term bills due October, 1888, ...		99,646.40	
" " overdue, ...		2,136.48	
			228,776.79
Cash in Suffolk National Bank, ...		75,302.13	
" " hands of Charles F. Mason, Bursar, ...		12,209.39	87,511.52
Total, ...			$6,874,046.25

The foregoing Property represents the following Funds and Balances, and is answerable for the same.

UNIVERSITY FUNDS.

Principal, Aug. 1, 1888.		Principal, July 31, 1889.	
$92,538.16	Stock Account (so called),	$97,357.41	
125,138.74	Insurance and Guaranty F'd. (so called),	125,138.74	
15,750.00	Israel Munson Fund,	15,750.00	
16,871.63	Leonard Jarvis "	16,871.63	
9,000.00	Sever Fund (unrestricted),	9,000.00	
25,000.00	John C. Gray Fund,	25,000.00	
115,966.56	George B. Dorr Fund,	115,966.56	
5,000.00	Seth Turner Fund,	5,000.00	
113,817.44	Francis E. Parker Fund,	113,817.44	
30,000.00	William Perkins Fund,	30,000.00	
	Stanton Blake Fund,	5,000.00	
62,672.72	President's Fund,	62,875.31	
154.82	Thomas Cotton Fund,	154.98	
5,250.00	Samuel D. Bradford Fund,	5,250.00	
33,324.18	Retiring Allowance Fund,	35,027.04	
22,000.00	John Cowdin Fund,	22,000.00	
56,646.61	John Parker Fellowships,	56,391.27	
10,562.33	Robert Treat Paine Fellowship,	10,727.05	
10,800.90	Harris Fellowship	10,602.83	
11,476.48	John Thornton Kirkland Fellowship,	11,312.90	
10,906.73	James Walker Fellowship,	10,839.08	
31,580.33	Rogers Fellowships,	31,644.07	
	Henry Lee Memorial Fellowship,	10,127.75	
	Ozias Goodwin Memorial Fellowship,	10,127.75	
	H. B. Rogers Memorial Fellowship,	10,127.75	
81,943.73	Henry T Morgan Fund,	81,943.73	
11,073.56	John Tyndall Scholarship,	11,139.44	
2,194.18	Sumner Prize Fund,	2,206.29	
150.00	Robert N Toppan Prizes	150.00	
150.00	Dante Prizes,	150.00	
	John O. Sargent Prizes,	100.00	
	Lectures on Political Economy Fund,	6,541.69	
19,913.65	Walter Hastings Fund,	20,670.44	
			$969,011.1

COLLEGE FUNDS.

27,748.64	Alford Professorship,	27,748.64	
28,337.40	Boylston "	28,337.40	
21,619.50	Eliot "	21,619.50	
10,000.00	Eliot " (Jon. Phillips's gift)	10,000.00	
3,500.01	Erving "	3,500.01	
35,990.99	Fisher "	35,990.99	
20,217.08	Hersey "	20,217.08	
21,744.18	Hersey " (Thomas Lee's gift),	21,744.18	
$1,089,040.55	Amounts carried forward,	$169,157.80	$969,011.1

Principal, Aug. 1, 1888.		Principal, July 31, 1889.	
$1,089,040.55	. . . . Amounts brought forward,	$169,157.80	$969,011.15
3,747.33	**Hollis** Professorship (Mathematics),	3,747.33	
34,517.60	**Hollis** " (Divinity), .	34,517.60	
43,062.93	**McLean** "	43,062.93	
21,000.00	**Perkins** "	21,000.00	
25,020.19	**Plummer** "	25,020.19	
52,500.00	**Pope** "	52,500.00	
52,996.37	**Rumford** "	56,441.25	
23,139.83	**Smith** "	23,139.83	
161,368.60	**Gurney** Fund, ...	176,431.83	
16,240.38	Fund for Permanent Tutors, . . .	16,240.38	
15,796.97	**Lee** Fund for Reading, ...	15,796.97	
145,000.00	**Class Subscription** Fund, ...	145,000.00	
13,154.73	**Daniel H. Peirce** "	13,220.50	
2,760.81	**Paul Dudley** Fund for Lectures, .	2,801.90	
31,500.00	**Jonathan Phillips** Fd. (unrestricted)	31,500.00	
1,050.00	**John A. Blanchard** " "	1,050.00	
4,642.27	**John W P Abbot** " "	4,879.48	
6,230.00	**Daniel Austin** " "	6,230.00	
344.12	**Henry Flynt's** Bequest, ...	344.48	
3,088.47	**Abbot** Scholarship, ...	3,246.27	
980.81	**Alford** "	1,030.94	
5,274.17	**Bartlett** "	5,293.67	
5,610.00	**Bassett** "	5,626.67	
11,643.86	**Bigelow** "	11,822.21	
109,423.10	**Bowditch** "	109,514.61	
326.84	**Bright** " (balance), . . .	354.34	
3,176.66	**Browne** "	3,339.00	
6,127.95	**Ruluff S. Choate** Scholarship, . .	6,141.09	
7,287.69	**Class of 1802** Scholarship, . . .	7,340.11	
2,948.87	" **1814** "	2,949.56	
5,306.49	" **1815** " **(Kirkland)**,	5,427.63	
3,830.68	" **1817** "	3,876.44	
1,738.98	" **1828** "	3,030.95	
2,863.00	" **1835** "	3,009.30	
4,084.23	" **1841** "	4,092.92	
4,073.52	" **1852** " **(Dana)**, .	4,281.70	
10,000.00	" **1856** "	10,000.00	
2,774.10	" **1867** "	2,928.66	
9,054.41	**Crowninshield** "	9,517.07	
600.00	**Warren H. Cudworth** Scholarships,	600.00	
5,358.30	**George & Martha Derby** Scholarship,	5,382.09	
5,326.86	**W. S. Eliot** Scholarship, ...	5,349.07	
5,847.39	**Farrar** "	5,846.17	
2,906.55	**Greene** "	3,055.10	
5,727.06	**Levina Hoar** "	5,769.71	
8,688.87	**Hodges** "	9,132.88	
5,213.72	**Hollis** "	5,280.15	
2,411.22	**Matthews** " (balance), .	2,761.46	
$1,984,806.48	. . . . Amounts carried forward,	$1,088,082.24	$969,011.15

Principal, Aug. 1, 1888.		Principal, July 31, 1889.	
$1,984,806.48	. . . **Amounts brought forward,**	$1,088,082.24	$969,011.15
5,052.10	**Merrick** Scholarship, ...	5,110.26	
7,488.19	**Morey** . “	7,496.03	
6,665.93	**Pennoyer** “	6,676.92	
2,942.17	**Perkins** “	3,092.51	
784.79.	**Rodger** “	824.90	
3,262.95	**Henry B. Rogers** “	3,279.69	
2,250.58	**Edward Russell** “	2,575.83	
5,247.72	**Mary & Leverett Saltonstall** Sch.,	5,515.89	
866.80	**Dorothy Saltonstall** Scholarship, .	911.10	
3,172.37	**Sever** Scholarship, ...	3,184.46	
9,592.25	**Sewall** “	9,682.40	
46,065.64	**Shattuck** “	46,219.61	
5,592.38	**Slade** “	5,628.13	
3,032.49	**Story** “	3,187.42	
2,365.79	**Stoughton** “	2,408.64	
116.66	**Thayer** “ (balance), .		
4,031.51	**Gorham Thomas** “	4,037.55	
6,870.44	**Toppan** “	6,921.50	
24,409.46	**Townsend** “	24,456.76	
3,987.50	**Walcott** “	3,991.29	
10,180.13	**Whiting** “	10,200.33	
9,841.29	**Exhibitions,**	9,870.95	
1,795.59	**Palfrey** Exhibition, ...	1,797.37	
1,200.00	**Samuel Ward** Fund, ...	1,200.00	
1,444.16	**John Glover** “	1,517.95	
10,981.43	**Quincy Tufts** “	10,997.56	
5,353.98	**Day** “	5,372.57	
10,363.41	**Munroe** “	10,382.96	
10,493.65	**Price Greenleaf** Aid, ...	9,558.24	
	Scholarship & Benef. money returned,	1,031.30	
4,154.03	**Boylston** Prizes for Elocution, . .	4,111.30	
12,716.78	**Bowdoin** Prizes for Dissertations, .	12,891.62	
1,163.41	**Hopkins** Gift for "Deturs," . . .	1,209.75	
618.46	**Chauncey Wright** Fund, ...	650.04	
	Increase S. Wheeler Fund, . . .	50,000.00	
793.05	Fund for Religious Services . . .	833.57	
15,402.19	**John E. Thayer** Fund, ...	15,348.61	
6,025.00	Classical Publ. Fd. of **Class of 1856,**	6,332.88	
42,650.85	Botanic Department Fund	42,780.76	
54,882.31	**Lowell** Fund for a Botanic Garden, .	55,882.31	
20,067.19	Herbarium Fund, ...	18,982.62	
25,730.55	**Carey** Building Fund, ...	26,759.79	
19,093.10	Botanical Building Fund, ...	3,357.91	
75,000.00	Physical Laboratory Endowment, . .	75,000.00	
1,718.31	**Jefferson** Physical Laboratory, . .	343.33	
	S. Johnston Bequest for gate-way .	10,162.50	
	Building Fund for Addition to Museum,	18,015.00	
880.38	Sundry Gifts (unexpended balances),	1,684.25	1,634,458.60
$2,471,153.40	. . . . . **Amounts carried forward,**		$2,603,469.75

Principal, Aug. 1, 1888.			Principal, July 31, 1889.
$2,471,153.40	. . . . . Amounts brought forward, ...		$2,603,469.75

LIBRARY FUNDS.

100,000.00	**Eben Wright** Fund, ...	100,000.00	
26,445.10	**Constantius** Fund, ...	26,085.63	
500.00	**Jarvis** Fund, ...	500.00	
9,172.25	**Daniel Treadwell** Fund, ...	9,172.25	
10,571.24	Subscription for Library, ...	10,512.86	
2,122.56	**Bowditch** Fund, ...	2,106.93	
97.10	**Bright** “	52.46	
5,330.02	**Denny** “	5,350.88	
5,673.74	**Farrar** “	5,560.00	
3,171.90	**Haven** “	3,091.73	
10,245.00	**Hayes** “	9,980.48	
5,344.23	**Hayward** “	5,290.10	
2,347.46	**Hollis** “	2,390.02	
2,102.24	**Homer** “	2,092.63	
5,415.88	**Lane** “	5,367.85	
21,938.80	**Lowell** “	21,945.92	
60,123.27	**Minot** “	60,034.76	
7,205.64	**Mary Osgood** “	7,120.59	
7,286.82	**Lucy Osgood** “	7,129.85	
5,365.52	**Salisbury** “	5,351.45	
20,126.00	**Sever** “	20,039.24	
4,029.87	**Shapleigh** “	4,094.31	
37,360.58	**Sumner** “	37,386.73	
5,135.35	**Tucker** “	5,006.90	
5,430.41	**Ward** “	5,281.36	
340.00	**Wales** “	417.37	
15,942.60	**Walker** “	16,009.16	
831.44	**Waterston** “	760.00	
273.03	Sundry gifts, etc. (unexpended balances),	257.18	378,388.64

DIVINITY SCHOOL FUNDS.

29,758.15	General Fund, ...	29,032.03	
37,583.74	**Bussey** Professorship, ...	37,583.74	
16,015.81	**Parkman** “	16,015.81	
6,008.43	**Hancock** “	6,008.43	
47,345.73	**Winn** Prof. of Ecclesiastical History,	47,345.73	
20,280.38	**Dexter** Lectureship, ...	20,280.38	
9,184.69	**Henry Lienow** Fund, ...	9,184.69	
5,250.00	**Mary P. Townsend** “	5,250.00	
2,100.00	**Winthrop Ward** “	2,100.00	
1,050.00	**Samuel Hoar** “	1,050.00	
1,050.00	**Abraham W. Fuller** “	1,050.00	
1,050.00	**Caroline Merriam** “	1,050.00	
7,875.00	**Joseph Baker** “	7,875.00	
40,000.00	**Th. Tileston** of New York Endowm't,	40,000.00	
$3,075,633.38	. . . . . Amounts carried forward,	$224,325.81	$2,981,858.39

Principal, Aug. 1, 1888.		Principal, July 31, 1889	
$3,075,633.88	. . . . Amounts brought forward,	$224,325.81	$2,981,858.
10,000.00	Henry P. Kidder Fund, ...	10,000.00	
7,000.00	Oliver Ames Fund, ...	17,000.00	
1,000.00	Abby Crocker Richmond Fund, .	1,000.00	
71,427.02	New Endowment, ...	71,427.02	
1,175.00	John W. Quinby Fund, ...	1,235.04	
13,849.02	Jackson Foundation, ...	13,916.70	
5,170.99	Thomas Cary Scholarships, . .	5,143.57	
2,435.24	George Chapman " . .	2,419.67	
3,859.59	Joshua Clapp " . .	3,931.84	
4,265.04	J Henry Kendall " . .	4,482.98	
3,303.06	Nancy Kendall " . .	3,288.50	
12,614.93	Abner W. Buttrick Fund, . . .	12,839.56	
911.34	Lewis Gould " . . .	911.34	
2,177.95	Joshua Clapp " . . .	2,177.95	
1,050.00	William Pomroy " . . .	1,050.00	
525.00	Hannah C. Andrews " . . .	525.00	
1,000.00	Adams Ayer " . . .	1,000.00	
890.00	Daniel Austin " . . .	890.00	
2,277.15	Beneficiary money returned, . . .	2,398.50	
			379,908.

LAW SCHOOL FUNDS.

13,812.83	Law School (balance), ...	20,838.69	
15,750.00	Dane Professorship, ...	15,750.00	
23,979.82	Bussey "	23,979.82	
8,340.81	Royall "	8,340.81	
94,657.95	New "	94,994.97	
32,021.25	Law School Book Fund, ...	37,021.25	200,425.

LAWRENCE SCIENTIFIC SCHOOL, AND MUSEUM OF COMPARATIVE ZOÖLOGY FUNDS.

214.19	Lawrence Scientific School (balance),	1,211.81	
38,807.17	Professorship of Engineering, . .	38,807.17	
61,536.43	Abbott Lawrence Fund, ...	61,536.43	
50,375.00	James Lawrence "	50,375.00	
30,686.85	John B. Barringer "	30,686.85	
100,000.00	Sturgis Hooper "	100,110.00	
50,000.00	Gray Fund for Zoölogical Museum,	50,000.00	
297,933.10	Agassiz Memorial Fund, } . .	297,933.10	
7,594.01	Teachers' and Pupils' " } . .	7,594.01	
117,469.34	Permanent Fund, ...	117,469.34	
7,740.66	Humboldt "	7,740.66	
			763,464.

MEDICAL SCHOOL FUNDS.

56,606.74	Medical School (balance), ...	57,886.65	
19,192.65	Jackson Medical Fund, ...	19,192.65	
17,129.20	Geo. C. Shattuck "	17,129.20	
$4,274,412.71	. . . . . Amounts carried forward,	$94,208.50	$4,325,656.

Principal, Aug. 1, 1888.		Principal, July 31, 1889.	
$4,274,412.71	. . . . Amounts brought forward,	$94,208.50	$4,325,656.78
12,812.16	**Warren** Fund for Anatom'l Museum,	12,880.16	
4,076.25	**Boylston** Fund for Medical Prizes,	3,619.53	
3,098.63	**Boylston** " " " Books,	3,256.99	
2,168.01	Medical Library Fund, ...	2,078.25	
2,000.00	**Quincy Tufts** Medical Fund, . .	2,000.00	
25,512.68	**Edward M. Barringer** " . .	25,512.68	
15,765.11	**Mary W Swett** Fund, ...	15,765.11	
20,000.00	**Samuel W. Swett** "	20,000.00	
1,826.08	**Samuel E. Fitz** "	1,836.08	
	New Subscription, ...	9,750.00	
307.17	**John Foster** Income for Medical Students, ...	217.86	
	D. W. Cheever Scholarship, . . .	5,138.38	196,263.54

OBSERVATORY FUNDS.

2,183.40	Observatory (balance), ...	346.29	
110,293.88	**Edward B. Phillips** Fund, . . .	110,293.88	
21,000.00	**James Hayward** " . . .	21,000.00	
26,209.57	**David Sears** " . . .	26,879.24	
11,535.39	**Josiah Quincy** " . . .	12,145.85	
2,000.00	**Charlotte Harris** " . . .	2,000.00	
5,000.00	**Thomas G. Appleton** " . . .	5,000.00	
13,380.00	**Augustus Story** Fund, ...	13,380.00	
50,000.00	Observatory Endowment, ...	50,000.00	
118,285.99	**Robert Treat Paine** Fund, . .	120,110.35	
50,000.00	**Paine** Professorship	50,000.00	
240.995.50	**Uriah A. Boyden** Fund, ...	230,208.14	
	Bruce Fund, ...	50,062.50	
488.01	**Draper Memorial** (balance), . .	772.93	
			692,199.18

OTHER FUNDS FOR SPECIAL PURPOSES.

413,092.80	**Bussey** Trust (income thereof, ½ to Bussey Institution, ¼ to Law School, and ¼ to Divinity School), . . .	413,092.80	
4,793.62	Bussey Institution, ...	6,433.53	
609.02	**Bussey** Building Fund, ...	609.02	
154,074.84	**James Arnold** "	154,468.50	
4,390.63	Arnold Arboretum "	4,581.08	
50,000.00	**Bright** Legacy	50,000.00	
33,553.04	**Robert Troup Paine** Fund, . . .	35,012.34	
42,000.00	**James Savage** Fund, ...	42,000.00	
3,171.50	**John Foster** "	3,171.50	
29,939.33	**Henry Harris** "	29,939.33	
16,395.43	**Gray** Fund for Engravings, . . .	16,413.98	
3,436.43	**Gospel Church** Fund, . . .	3,612.01	
2,625.00	**Fund of the Class of 1853**, . . .	2,625.00	
1,000.00	" " " " " **1834**, . . .	1,000.00	
$5,772,452.18	. . . . Amounts carried forward,	$762,959.09	$5,214,119.50

Principal, Aug. 1, 1888.		Principal, July 31, 1889.	
$5,772,452.18	. . . . Amounts brought forward,	$762,959.09	$5,214,119.50
197,375.32	**Walter Hastings** Building Fund, .	65,643.01	
689,984.74	**Price Greenleaf** Fund, ...	722,691.71	
23,160.28	**Gore** Annuity Fund, ...	23,743.76	
5,339.88	**Lucy Osgood** Annuity Fund, . .	5,192.75	
50,736.86	**Bemis** Annuity Fund, ...	50,785.24	
2,155.85	Dental Subscription Fund, . . .	8,155.85	
			1,639,171.41

FUNDS IN TRUST FOR PURPOSES NOT CONNECTED WITH THE COLLEGE.

15,932.55	**Daniel Williams** Fund for the conversion of the Indians, ...	15,944.73	
4,805.57	**Sarah Winslow** F'd., for the Minister and Teacher at Tyngsborough, Mass.,	4,810.61	
			20,755.34
$6,761,943.23			$6,874,046.25

Changes in the Funds during the year ending July 31, 1889.

Total amount of Funds and balances, July 31, 1889, as before stated,		$6,874,046.25	
Total amount of Funds and balances, August 1, 1888, as before stated,		6,761,943.23	
Showing a total increase during the year of			$112,103.02
Which is made up as follows: —			
Gifts forming new Funds or increasing old ones,		145,715.59	
Increase of Funds established during the year,		561.23	
Credit balances created " " "		83,090.00	
Increase of Funds by gain from change of investment,		14,588.08	
Increase of Stock Account, by excess of income over expenditure in College, Library, and University accounts,		90.56	
		$244,045.46	
Deduct from this amount			
Decrease more than increase of Funds and balances, which appear both at the beginning and end of the year,	$131,825.78		
Unused balance returned to Trustee,	116.66		
		131,942.44	
			$112,103.02

Net decrease of Funds and balances as above,	$131,942.44
Less increase as above,	98,329.87
Leaving amount of the net decrease of the Funds and balances, excluding gifts for capital account, as is also shown in the following table,	$33,612.57

Statement showing Changes in the Diff

Increase of Funds which appear both at the beginning and the end o year, being the excess of income (including gifts for immediate use) payments towards the special objects of those Funds.

UNIVERSITY.		
Stock Account,	$4,728.69	
President's Fund,	202.59	
Retiring Allowance Fund,	1,702.86	
Robert Treat Paine Fellowship,	164.72	
John Tyndall Scholarship,	65.88	
Sumner Prize Fund,	12.11	
Thomas Cotton Fund,	.16	
Rogers Fellowships,	63.74	
Walter Hastings Fund,	756.79	
		$7,6
COLLEGE.		
Daniel H. Peirce Fund,	65.77	
Paul Dudley Fund,	41.09	
John W. P. Abbott Fund,	237.21	
Gurney Fund,	3,682.09	
Henry Flynt's Bequest,	.36	
Abbot Scholarship,	157.80	
Alford "	50.13	
Bartlett "	19.50	
Bassett "	16.67	
Bigelow "	178.35	
Browne "	162.34	
R. S. Choate Scholarship,	13.14	
Class of 1802 "	52.42	
" **1815** " **(Kirkland)**,	121.14	
" **1817** "	45.76	
" **1828** "	101.54	
" **1835** "	146.30	
" **1841** "	8.69	
" **1852** " **(Dana)**,	208.18	
" **1867** "	142.06	
Crowninshield "	462.66	
George & Martha Derby Scholarship,	23.79	
W. S. Eliot Scholarship,	22.21	
Greene "	148.55	
Hodges "	444.01	
Levina Hoar "	42.65	
Hollis "	66.48	
Pennoyer "	10.99	
Perkins "	150.34	
Rodger "	40.11	
Henry B. Rogers "	16.74	
Amounts carried forward,	$6,879.02	$7,69

Funds during the year ending July 31, 1889.

Decrease of Funds, which appear both at the beginning and the end of the year, being the excess of payments over income received (including gifts for immediate use) for the special objects of those Funds.

UNIVERSITY.

John Parker Fellowships,	255.34	
Harris Fellowships,	198.07	
John Thornton Kirkland Fellowship,	163.58	
James Walker Fellowship,	67.65	
		684.64

COLLEGE.

Farrar Scholarship,	1.22	
Price Greenleaf Aid,	935.41	
Boylston Prizes for Elocution,	42.73	
John E. Thayer Fund,	53.58	
Herbarium “	1,134.57	
Botanical Building “	15,735.19	
Jefferson Physical Laboratory,	1,374.98	
		19,277.68

LIBRARY.

Constantius Fund,	359.47	
Subscription “	58.38	
Bright “	44.64	
Haven “	80.17	
Homer “	9.61	
Lucy Osgood “	156.97	
Ward “	149.05	
Waterston “	71.44	
Sundry gifts (unexpended balances),	15.85	
Bowditch Fund,	15.63	
Farrar “	113.74	
Hayes “	264.52	
Hayward “	54.13	
Lane “	48.03	
Minot “	88.51	
Mary Osgood “	85.05	
Salisbury “	14.07	
Sever “	86.76	
Tucker “	128.45	
		1,844.47

DIVINITY SCHOOL.

General Fund,	726.12	
Thomas Cary Scholarships,	27.42	
George Chapman “	15.57	
Nancy Kendall “	64.56	
		833.67
Amount carried forward,		$22,640.46

Statement showing Changes in the Differen

INCREASE.

Amounts brought forward, . . .	$6,879.02	$7,697.5
Bowditch Scholarship, ...	91.51	
Bright "	27.50	
Class of 1814 "	.69	
Matthews "	350.24	
Merrick "	58.16	
Morey "	7.84	
Edward Russell "	125.25	
Mary & Leverett Saltonstall Scholarship, .	268.17	
Dorothy Saltonstall Scholarship, ...	44.30	
Slade Scholarship, ...	35.75	
Sever "	12.09	
Sewall "	90.15	
Shattuck "	153.97	
Story "	154.93	
Stoughton "	42.85	
Gorham Thomas "	6.04	
Toppan "	51.06	
Townsend "	47.30	
Whiting "	20.20	
John Glover Fund, ...	73.79	
Bowdoin Prizes, ...	174.84	
Hopkins Gift for "Deturs,"	46.34	
Chauncey Wright Fund, ...	31.58	
Botanic Department, ...	129.91	
Fund for Religious Services, ...	40.52	
Walcott Scholarship, ...	3.79	
Exhibitions, ...	29.66	
Palfrey Exhibition, ...	1.78	
Quincy Tufts Fund, ...	16.13	
Day "	18.59	
Munroe "	19.55	
Classical Publication Fund of **Class of 1856**, .	307.88	
Carey Building Fund, ...	1,029.24	
Sundry gifts (unexpended balances), ...	753.92	
		11,144.54

LIBRARY.

Denny Fund, ...	20.86	
Hollis "	42.56	
Lowell "	7.12	
Shapleigh "	64.44	
Sumner "	26.15	
Wales "	77.37	
Walker "	66.56	
		305.06
Amount carried forward, ...		$19,147.14

Funds during the year ending July 31, 1889. (Continued.)

DECREASE.

Amount brought forward, . . .		$22,640.46
MEDICAL SCHOOL.		
Boylston Fund for Medical Prizes, ...	456.72	
Medical Library Fund, ...	89.76	
Foster income for Medical Students, ...	89.31	
		635.79
OBSERVATORY.		
General Fund, ...	1,837.11	
Uriah A. Boyden Fund, ...	10,787.36	
		12,624.47
FUNDS FOR SPECIAL PURPOSES.		
Walter Hastings Building Fund, ...	131,732.81	
Lucy Osgood Annuity Fund, ...	147.13	
		131,879.44
		$167,780.16
Unused balance of **Thayer** Scholarships returned to Trustee, ...		116.66
Amount carried forward, ...		$167,896.82

Statement showing Changes in the Different

INCREASE.

Amount brought forward, . . .		$19,147.14

DIVINITY SCHOOL.

Winn Professorship, ...	500.00	
John W. Quinby Fund, ...	60.04	
Jackson Foundation, ...	67.68	
Joshua Clapp Scholarship, ...	72.25	
J. H. Kendall “	217.94	
A. W. Buttrick Fund, ...	224.63	
Beneficiary money returned, ...	116.35	
		1,258.89

LAW SCHOOL.

General Fund, ...	$6,525.86	
New Professorship, ...	337.02	
		6,862.88

LAWRENCE SCIENTIFIC SCHOOL AND MUSEUM OF COMPARATIVE ZOÖLOGY.

General Fund, ...	997.62	
Sturgis Hooper Fund, ...	110.00	
		1,107.62

MEDICAL SCHOOL.

General Fund, ...	1,279.91	
Warren Fund for Anatomical Museum, ...	68.00	
Boylston Fund for Medical Books, ...	158.36	
		1,506.27

OBSERVATORY.

David Sears Fund, ...	669.67	
Josiah Quincy Fund, ...	590.46	
Draper Memorial, ...	284.92	
		1,545.05

FUNDS FOR SPECIAL PURPOSES.

Bussey Institution, ...	1,639.91	
James Arnold Fund, ...	393.66	
Arnold Arboretum, ...	190.45	
Robert Troup Paine Fund, ...	1,459.30	
Gray Fund for Engravings, ...	18.55	
Gospel Church Fund, ...	175.58	
Gore Annuity “	583.48	
Bemis “ “	48.38	
Daniel Williams “	12.18	
Sarah Winslow “	5.04	
		4,526.53
Amount carried forward, ...		$35,954.38

Funds during the year ending July 31, 1889. (Continued.)

DECREASE.

Amount brought forward,	**$167,896.82**
Amount carried forward,	**$167,896.82**

Statement showing Changes in the Different

INCREASE.

Amount brought forward,		$35,954.38
Increase of Funds established during the year.		
Henry Lee Memorial Fellowships,	$127.75	
Ozias Goodwin " "	127.75	
Henry B. Rogers " "	127.75	
Lectures on Political Economy,	13.90	
Scholarship and Beneficiary money returned,	25.70	
David Williams Cheever Scholarship,	138.38	561.23
Credit balances created.		
Samuel Johnston bequest for gate-way,	10,162.50	
Building Fund for Professor **Cooke's** addition to the University Museum,	13,015.00	
Bruce Fund,	50,062.50	
John O. Sargent Prizes,	100.00	
New Subscription for Medical School,	9,750.00	83,090.00
Rumford Professorship, gain from change of special investment,	3,444.88	
Price Greenleaf Fund, net gain from change of special investments,	11,143.20	14,588.08
Increase of Stock Account by surplus of income over expenditures, in College, Library, and University Accounts,		90.56
		$134,284.25
Balance, which is the net decrease of the Funds and balances for the year ending July 31, 1889, excluding gifts for capital account,		33,612.57
Total,		$167,896.82

Funds during the year ending July 31, 1889. (Continued.)

DECREASE.

Amount brought forward, ...	$167,896.82
Total, ...	$167,896.82

The following tables are not found, in their present form, in the Treasurer's books. They are intended to exhibit with some detail the resources and the expenditures of each department of the University. The income of every fund held by the University is given in these tables, and also the sum paid out for the specific object of each and every fund, in case that sum be either less or more than the actual income of the fund. If the object to which the income of a fund is to be applied be a general one, — like salaries, for example,— no separate mention is made in these tables of that appropriation. That particular payment is merged with others of the same kind under the general heading. A balanced summary of these tables will be found on page 60.

Table No. I.

THE UNIVERSITY.

RECEIPTS.

Income of the unappropriated fund heretofore called the Stock Account, at present accumulating, ...	$4,728.69	
Income of the following funds : —		
Insurance and Guaranty, ...	6,394.60	
Israel Munson, ...	804.83	
Leonard Jarvis, ...	862.16	
Samuel D. Bradford, ...	268.28	
Sever, ...	459.90	
John C. Gray, ...	1,277.50	
George B. Dorr, ...	5,925.91	
Seth Turner, ...	255.50	
Henry T. Morgan.	4,187.34	
Henry Harris, ½ of income, ...	764.94	
Francis E. Parker, ...	5,816.05	
William Perkins, ...	1,533.00	
Stanton Blake, ...	21.31	
John Cowdin, from special investment, . . .	1,628.70	
Walter Hastings, from special investment, .	756.79	
Thomas Cotton, ...	7.51	
President's, ...	3,202.59	
Parker Fellowships, ...	2,894.66	
John Thornton Kirkland Fellowship, . . .	586.42	
Harris Fellowship, ...	551.93	
James Walker Fellowship, ...	557.35	
Rogers Fellowships, ...	1,613.74	
Robert Treat Paine Fellowship, ...	539.72	
John Tyndall Scholarship, ...	565.88	
Henry Lee Memorial Fellowship, ...	127.75	
Ozias Goodwin " "	127.75	
Henry Bromfield Rogers Memorial Fellowship,	127.75	
Sumner Prize, ...	112.11	
Retiring Allowance, ...	1,702.86	
Lectures on Political Economy, ...	13.90	
		48,417.42
Amount carried forward, ...		$48,417.42

TABLE I., CONTINUED.

RECEIPTS.

Amount brought forward, . . .		$48,417.42
From **John O. Sargent**, gift for prizes, ...	$100.00	
From **Robert N. Toppan**, " " "	150.00	250.00
Balance remaining after dividing the net income among the Funds, ...	149.12	
For examination fee for degree of S.D., ...	30.00	
Use of house by College officer, ...	400.00	
For care of the **Sarah Winslow** Fund, ...	6.01	
Sale of Anniversary volume, ...	49.50	
" Catalogues, Calendars, and Directories, . . .	627.01	1,261.64
		$49,929.06

PAYMENTS.

Overseers' Expenses.		
Advertising, ...	$150.00	
Printing President's Annual Report, ...	637.89	
Printing Treasurer's " "	147.11	
Printing other reports, auditing Treasurer's accounts, &c., ...	137.00	1,072.00
Office Expenses.		
President's, ...	790.07	
Treasurer's, ...	731.00	
Bursar's, ...	1,554.93	
Supt. of Buildings, ...	149.86	
Corporation Rooms (fuel, rent, furniture, &c.), .	2,779.49	6,005.35
Salaries.		
President, ...	8,007.35	
Treasurer and Deputy Treasurer, ...	5,000.00	
Secretary of the University, ...	2,000.00	
Secretary of the Board of Overseers, ...	100.00	
Bursar, ...	2,500.00	
Bursar's Assistant, ...	883.34	
Clerks Treasurer's office, ...	3,800.00	
Superintendent of Buildings, ...	2,266.67	24,557.36
Memorial Hall and Sanders Theatre.		
Insurance, ...	734.78	
Repairs, fuel, gas, &c., ...	532.31	1,267.09
General Expenses.		
Advertising, ...	146.03	
Labor, &c. on grounds outside of College Yard,	2,342.90	
Subscription to Mercantile Agency, ...	300.00	
Watering streets, and water, ...	273.55	
Watchmen, ...	927.24	
Freight, diplomas, and sundries, ...	134.52	
Printing, ...	248.95	
Music, Commencement, ...	185.00	
Amounts carried forward, ...	$4,558.19	$32,901.80

TABLE I., CONTINUED.

PAYMENTS.

Amounts brought forward,	$4,558.19	$32,901.80
General Expenses.		
Annual Catalogue and Calendar,	1,437.50	
Repairs and improvements on President's House,	474.98	
Surveying the Brighton Marsh,	569.15	
Delegates' expenses to Universities,	317.80	
Legal services,	433.00	
Interest on advances for University Lands,	909.78	8,700.40
		$41,602.20
Fellowships.		
John Parker,	3,150.00	
Harris,	750.00	
John Thornton Kirkland,	750.00	
James Walker,	625.00	
Rogers,	1,550.00	
Morgan,	3,000.00	
Robert Treat Paine,	375.00	
John Tyndall Scholarship,	500.00	10,700.00
Prizes.		
Robert N. Toppan,	150.00	
Charles Sumner,	100.00	250.00
		$52,552.20

TABLE No. II.

THE COLLEGE.

RECEIPTS.

From Term Bills.		
Instruction,	$180,772.12	
Rents available for general expenses,	35,162.24	215,934.36
Income of Scholarship Funds.		
Abbot (accumulating),	157.80	
Alford (accumulating),	50.13	
Bartlett,	269.50	
Bassett,	286.67	
Bigelow,	595.01	
Bowditch,	5,591.51	
Bright, ½ income of **Bright** Legacy,	1,277.50	
Browne (accumulating),	162.34	
Ruluff Sterling Choate,	313.14	
Class of 1802,	372.42	
" **1814**,	150.69	
" **1815 (Kirkland)**,	271.14	
" **1817**,	195.76	
" **1828** (accumulating),	101.54	
" **1835** (accumulating),	146.30	
" **1841**,	208.69	
" **1852 (Dana)** (accumulating),	208.18	
Amounts carried forward,	$10,358.32	$215,934.36

TABLE II., CONTINUED.

RECEIPTS.

Amounts brought forward,		$10,358.32	$215
Class of 1856, from special investment, . . .		600.00	
" **1867** (accumulating), ...		142.06	
Warren H. Cudworth, ...		600.00	
Crowninshield (accumulating)		462.66	
George and **Martha Derby**, ...		278.79	
Wm. Samuel Eliot, ...		272.21	
Farrar, ...		298.78	
Greene (accumulating), ...		148.55	
Price Greenleaf, ...		8,000.00	
Levina Hoar (Town of Lincoln), ...		292.65	
Hodges (accumulating), ...		444.01	
Hollis, ...		266.48	
George Emerson Lowell, ...		400.00	
Matthews (½ of net rents of Hall), ...		4,850.24	
William Merrick, ...		258.16	
Morey, ...		382.64	
Pennoyer. Interest, ...	$113.49		
Annuity, ...	277.50	390.99	
Perkins (accumulating), ...		150.34	
Rodger (accumulating)		40.11	
Henry Bromfield Rogers.		166.74	
Edward Russell (accumulating), ...		125.25	
Mary & **Leverett Saltonstall** (accumulating),		268.17	
Dorothy Saltonstall (accumulating), ...		44.30	
Savage, ...		300.00	
Sever, ...		162.09	
Sewall, ...		490.15	
Shattuck, ...		2,353.97	
Slade, ...		285.75	
Story (accumulating)		154.93	
Stoughton (accumulating), ...		54.73	
Gorham Thomas, ...		206.04	
Toppan, ...		351.06	
Townsend, ...		1,247.30	
Walcott, ...		203.79	
Whiting, ...		520.20	30,566.41
Received from the Trustee of the **Thayer** Scholarships, . . .			3,500.00
Other Beneficiary Funds, income of.			
"**Exhibitions**		502.88	
Palfrey "Exhibition,"		91.78	
Samuel Ward. From special investment, . .		50.00	
John Glover (accumulating), ...		73.79	
Quincy Tufts, ...		561.13	
Moses Day, ...		278.59	
Munroe, ...		529.55	
Price Greenleaf Aid, ...		13,904.83	
Scholarship and Beneficiary money returned, . .		25.70	16,013.25
Amount carried forward, ...			$266,014.02

TABLE II., CONTINUED.

RECEIPTS.

Amount brought forward, . .		$266,01
Prize Funds, income of.		
Ward Nicholas Boylston Prizes for Elocution,	$212.27	
James Bowdoin Prizes for Dissertations, . .	649.84	
Edward Hopkins Gift for "Deturs," . . .	287.87	
Chauncey Wright, ...	31.58	1,18
Funds for Instruction, income of,		
Alford Professorship, ...	$1,417.97	
Boylston "	1,448.02	
Eliot "	1,104.78	
J. Phillips's addition to **Eliot** Professorship,	500.00	
Erving Professorship, ...	178.85	
Fisher "	1,839.14	
Hersey " ⅔ inc. of the Fund,	619.85	
Hollis " (Mathematics), . .	191.47	
Hollis " (Divinity), . . .	1,763.87	
McLean "	2,200.52	
Perkins "	1,073.10	
Plummer "	1,278.52	
Pope "	2,682.75	
Rumford "	2,867.27	
Smith "	1,182.45	
Fund for Permanent Tutors, ...	829.86	
Thos. Lee Fund for the Hersey Prof., . . .	1,111.12	
Thos. Lee " " Reading, ...	807.23	
Class Subscription, ...	7,409.50	
Henry Flynt, ...	16.76	
Paul Dudley Fund, ...	141.09	
Gifts for salaries, ...	950.00	31,61
Income of **Jonathan Phillips's** unrestricted Fund,	1,609.65	
" " **John A. Blanchard's** " "	53.66	
" " **Daniel H. Pierce** " "	657.74	
" " **J. W. P. Abbot** " (accumulating),	237.21	
" " **John E. Thayer** Fund, ...	787.04	
" " Fund for Religious Services, ...	40.52	
" " **Gurney** Fund, ...	8,682.09	
" " Classical Publication Fund of the **Class of** 1856, ...	807.88	
" " **Increase Sumner Wheeler** Fund, . . .	745.19	13,12
Hemenway Gymnasium.		
For use of lockers, ...	2,128.00	
Fee for use of, ...	10.00	
For use of by other departments, ...	1,566.82	3,70
Jefferson Physical Laboratory.		
Income from Endowment, ...	3,832.50	
Interest on unexpended balance, ...	87.79	3,92
Amount carried forward, . . .		$319,55

TABLE II., CONTINUED.

RECEIPTS.

Amount brought forward, . .			$319,555.29
Carey Building Fund.			
Interest on unexpended balance, ...			1,029.24
Samuel Johnston bequest for gate-way.			
Amount of gift, ...		10,000.00	
Interest on Fund, ...		162.50	10,162.50
Building Fund for Professor **Cooke's** addition to the University Museum.			
Subscriptions received, ...		13,000.00	
Interest on Fund, ...		15.00	13,015.00
Botanic Garden.			
Income of Fund, ...		2,179.47	
" " the **Lowell** Fund, ...		2,819.39	
Gifts for present use, ...		2,100.00	
Rent of house, ...		700.00	7,798.86
Botanical Building Fund.			
Subscriptions received, ...		27,000.00	
Interest on Fund, ...		320.07	27,320.07
Herbarium. Income of Fund, ...		1,025.42	
Gifts for present use, ...		130.65	
Received from Professor **Gray's** copyrights. .		2,205.59	3,361.66
Sundries.			
For Printing by College Press for other departm'ts,		6,272.62	
For use of rooms by College officers, &c., . . .		630.01	
Sale of tickets to Commencement Dinner, . . .		521.00	
" " Chemistry and Physics pamphlets, . . .		275.50	
" " grass, ...		50.00	
" " old examination papers, ...		70.96	
Fees for admission examinations, &c., ...		814.00	
Balance of fees for Summer Courses, ...		244.29	
Laboratory fees received.			
Chemical, ...	$5,672.01		
Physical, ...	1,268.77		
Natural History, ...	1,378.75	8,319.53	17,197.91
Gifts for books for class-room libraries, ...			1,420.50
Total receipts, ...			$400,861.08

PAYMENTS.

Paid the incumbents of the following Scholarships.	
Bartlett, ...	$250.00
Bassett, ...	270.00
Bigelow, ...	416.66
Bowditch, ...	5,500.00
Bright, ...	1,250.00
Amount carried forward, . . .	$7,686.66

Table II., continued.

PAYMENTS.

Amount brought forward, . . .	$7,686.66	
Ruluff Sterling Choate, ...	300.00	
Warren H. Cudworth, ...	600.00	
Class of 1802, ...	200.00	
" **1814**, ...	150.00	
" **1815 (Kirkland)**, ...	150.00	
" **1817**, ...	150.00	
" **1841**, ...	200.00	
" **1856**, ...	600.00	
George and **Martha Derby**, ...	250.00	
Wm. Samuel Eliot, ...	250.00	
Farrar, ...	300.00	
Price Greenleaf, ...	3,000.00	
Levina Hoar, ...	250.00	
Hollis, ...	200.00	
George Emerson Lowell, ...	400.00	
Matthews, ...	4,500.00	
William Merrick, ...	200.00	
Morey, ...	374.80	
Pennoyer, ...	380.00	
Henry Bromfield Rogers, ...	150.00	
Savage, ...	300.00	
Sever, ...	150.00	
Sewall, ...	400.00	
Shattuck, ...	2,200.00	
Slade, ...	250.00	
Thayer, ...	3,500.00	
Gorham Thomas, ...	200.00	
Toppan, ...	300.00	
Townsend, ...	1,200.00	
Walcott, ...	200.00	
Whiting, ...	500.00	$29,491.46
Paid other Beneficiaries from the following Funds.		
Exhibitions, ...	473.22	
Palfrey Exhibition, ...	90.00	
Samuel Ward Income, ...	50.00	
Quincy Tufts "	545.00	
Day Fund "	255.00	
Munroe Fund "	510.00	
Price Greenleaf Aid, ...	14,840.24	16,763.46
Prizes. **Boylston Prizes** for Elocution, ...	255.00	
Bowdoin Prizes for Dissertations	475.00	
"Deturs" from **Hopkins** Fund	241.53	971.53
Hemenway Gymnasium.		
Salaries and wages, ...	5,720.00	
Janitors and cleaning, ...	1,253.43	
Amounts carried forward, . . .	$6,973.43	$47,226.45

TABLE II., CONTINUED.

PAYMENTS.

Amounts brought forward, . . .		$6,973.48	$47,226.45
Gas, water, fuel, and sundries, ...		1,628.73	
Repairs and improvements, ...		794.71	
Apparatus, ...		160.85	
Insurance, ...		795.00	10,352.77
fferson Physical Laboratory.			
Spent on building and fixtures, ...		2,237.92	
Laboratory expenses, ...	$3,657.35		
Less part paid by the College, . . .	600.00	3,057.35	5,295.27
hn E. Thayer Fund,			
Expenses Quarterly Journal of Economics, . . .			840.62
ughton Fund.			
Repairing and photographing Stoughton monument,			11.88
aries for instruction, ...			171,563.20
rments for College Edifices not valued on Treasurer's books.			
Repairs and improvements, ...		14,006.33	
Insurance, ...		1,375.08	15,381.41
tanic Garden, for labor, repairs, materials, &c., . . .			7,668.95
tanical Building Fund.			
Paid on account of construction, &c., ...			43,055.26
rbarium, for labor, repairs, materials, &c., ...			4,496.23
id from gifts for Books for Political Economy Dept.,		38.45	
" " " " " " American History "		193.47	
" " " " " " French "		58.00	
" " " " " " Sanskrit "		260.00	
" " " " " " Social Questions,		116.66	666.58
neral Expenses.			
Appropriations for collections and laboratories.			
Physical Apparatus (Prof. Trowbridge),	1,230.00		
Mineral and Chemical (Prof. Cooke), .	800.00		
Botanical (Prof. Goodale), ...	200.00		
Botanical (Prof. Farlow), ...	200.00		
Geological (Prof. Shaler), ...	200.00		
Zoölogical (Prof. Mark), ...	200.00		
Psychology (Prof. James), ...	50.00		
Fine Arts (Prof. Norton), ...	200.00		
Geography (Asst. Prof. Davis), ...	100.00		
Petrography (Instructor Wolff), ...	25.00		
Drawing (Instructor Moore), ...	150.00		
Photographing (Asst. Prof. Sargent), .	150.00		
Laboratory fees appropriated, ...	8,319.53		
Fuel and service in Nat. Hist. Labor's,	1,000.00	12,824.53	
Jefferson Physical Laboratory.			
Expenses paid by the College, ...		600.00	
Amounts carried forward,		$13,424.53	$306,558.62

Table II., continued.

PAYMENTS.

Amounts brought forward,		$13,424.58	$306,558.62
Appleton Chapel.			
Preaching and morning services,	3,250.00		
Organist and Choir-master,	1,200.00		
Choir,	1,350.00		
Books, hymnals, and music,	209.86		
Fuel, gas, cleaning, &c.,	1,399.72		
Services and wages,	145.75	7,555.33	
Admission examinations,		1,275.84	
Advertising,		343.04	
Books,		3.46	
Cleaning and care of College buildings not valued on Treasurer's books,		8,737.94	
College Yard expenses, labor, material, &c.,		2,438.54	
Commencement Dinner,		581.49	
Dean and Chairman Parietal Committee, salaries, and office expenses,		3,946.75	
Fuel, &c.,		3,322.78	
Furniture,		758.81	
Freight, diplomas, and sundries,		494.53	
Gas,		1,202.85	
Legal services,		141.00	
Music, Class-Day,		125.00	
Pews hired in Cambridge churches,		1,017.00	
Printing office, expenses,		7,488.41	
Services of examiners and proctors,		4,306.30	
" " undergraduates,		503.42	
" in Chemical Laboratory (part of),		207.92	
Supplies, tools, and materials,		470.69	
Watchmen,		605.00	
Water rates,		554.55	
Clerical service for Summer Schools, &c.,		43.45	59,548.6
Total payments,			$366,107.2

Table No. III.

THE LIBRARY.

RECEIPTS.

Income of the following Funds for the purchase of books.		
Subscription for Library,		$540.18
Nathaniel I. Bowditch,		108.49
Bright, ½ income of the **Bright** Legacy,	$1,277.50	
Interest on balance,	4.96	1,282.46
Constantius, ½ of income for the purchase of books,		675.67
Denny,		272.36
Amount carried forward,		$2,879.16

TABLE III., CONTINUED.

RECEIPTS.

Amount brought forward, . . .		$2,879.16	
Eliza Farrar, ...		289.94	
Horace A. Haven, ...		162.09	
Francis B. Hayes, ...		523.52	
George Hayward, ...		273.08	
Thomas Hollis, ...		119.93	
Sidney Homer, ...		107.41	
Frederick A. Lane, ...		276.76	
Lowell, ...		1,121.08	
Charles Minot. From special investm't,	$4,200.00		
Interest on unexpended balance,	6.29	4,206.29	
Lucy Osgood, ...		372.37	
Mary Osgood, ...		368.23	
Stephen Salisbury, ...		274.20	
Sever, ...		1,028.44	
Samuel Shapleigh, ...		205.93	
Charles Sumner, ...		1,909.15	
Ichabod Tucker. From special investm't,	$200.00		
Interest on unexpended balance,	6.90	206.90	
George W. Wales. Gift, ...	200.00		
Interest on unexpended balance,	17.37	217.37	
James Walker, ...		814.69	
Thomas W. Ward, ...		277.47	
Executors of **Robert Waterston.**			
Interest on unexpended balance, . . .		42.46	$15,676.47
Gift from Dante Society, ...		100.00	
Sale of duplicates, &c., ...		23.70	123.70
James Savage Fund for general expenses (¾ of income),		1,384.65	
Constantius " " " ½ " "		675.67	
Daniel Treadwell " " "		468.69	
Daniel Austin " " "		318.35	
Eben Wright " " "		5,110.00	
Jarvis " " "		25.55	
Price Greenleaf " " "		13,904.82	21,887.73
Fees for use of Library, ...		175.00	
Sale of Bulletins, ...		27.00	202.00
			$37,889.90

PAYMENTS.

For Books from	
Subscription Fund, ...	$598.56
Bowditch "	124.12
Bright "	1,327.10
Constantius "	1,035.14
Denny "	251.50
Farrar "	403.68
Haven "	242.26
Amount carried forward, ...	$3,982.36

TABLE IV., CONTINUED.

RECEIPTS.

Amount brought forward,	$6,985.98	
Samuel Dexter,	1,036.31	
Henry Lienow,	469.35	
Mary P. Townsend,	268.28	
Winthrop Ward,	107.31	
Samuel Hoar,	53.65	
Abraham W. Fuller,	53.65	
Caroline Merriam,	53.65	
Joseph Baker,	402.41	
Thomas Tileston of New York Endowment,	2,044.00	
Oliver Ames,	868.70	
Henry P. Kidder,	511.00	
Abby Crocker Richmond,	51.10	
New Endowment,	3,649.92	$16,555.31
Income of Scholarship Funds.		
Jackson Foundation,	707.68	
Thomas Cary,	264.24	
George Chapman,	124.43	
Joshua Clapp,	197.25	
J. Henry Kendall,	217.94	
Nancy Kendall,	168.78	1,680.32
Income of other Funds.		
Joshua Clapp,	111.30	
William Pomroy,	53.65	
Hannah C. Andrews,	26.83	
Lewis Gould,	46.55	
Daniel Austin,	45.48	
Abner W. Buttrick,	644.63	
Adams Ayer,	51.10	
John W. Quinby,	60.04	
Interest on Beneficiary money returned,	116.35	1,155.93
Benjamin Bussey Trust (½ of net income for use of this School),		3,852.45
Term Bills.		
For instruction,	2,137.20	
For rents,	2,520.00	4,657.20
Sale of book cases given by **Mrs. Ezra Abbot,**	10.00	
" duplicate books,	27.64	37.64
		$27,938.85

PAYMENTS.

For Salaries for instruction,	$18,536.13
Services and wages,	1,914.76
Labor, repairs, and improvements,	1,739.53
Cleaning and care of rooms,	1,003.00
Books and binding,	644.08
Amount carried forward,	$23,837.50

TABLE IV., CONTINUED.

PAYMENTS.

Amount brought forward, . .	$23,837.50	
Printing, ...	55.00	
Fuel, gas, and water, ...	779.48	
Stationery, postage, diplomas, and sundries, . . .	209.90	
Collation, ...	75.00	
Furniture, ...	188.34	
Insurance, ...	225.00	
Proportion of expenses of Gymnasium, ...	146.50	
Advertising, ...	94.41	$25,611.13
Paid the incumbents of the following Scholarships.		
Jackson Foundation, ...	640.00	
Thomas Cary, ...	291.66	
George Chapman, ...	140.00	
Joshua Clapp, ...	125.00	
Nancy Kendall, ...	233.34	1,430.00
Paid beneficiaries from the following Funds:		
Abner W. Buttrick, ...	420.00	
William Pomroy, ...	52.50	472.50
		$27,513.63

TABLE NO. V.

LAW SCHOOL.

RECEIPTS.

Income of the following Funds.		
Law School, balance, ...	$705.84	
Nathan Dane Professorship, ...	804.83	
Benjamin Bussey "	1,225.38	
Isaac Royall "	426.23	
New Professorship, ...	4,837.02	
Law School Book Fund, ...	1,827.90	
Benjamin Bussey Trust (¼ of net income for use of this School), ...	3,852.45	
John Foster, income for Law Students every second year, ...	162.09	$13,841.74
Term Bills.		
For instruction, ...		31,150.00
Gift from Harvard Law School Association to increase the instruction in Constitutional Law, ...		500.00
Sale of Books, ...	49.01	
" " Catalogues, ...	173.40	222.41
		$45,714.15

PAYMENTS.

For Salaries for instruction, ...	$24,000.00
Librarian and Assistants, ...	3,839.67
Janitors, cleaning, &c., ...	1,056.32
Amount carried forward, . . .	$28,895.99

TABLE V., CONTINUED.

PAYMENTS.

Amount brought forward, . . .	$28,895.99	
Books and binding, ...	2,690.08	
Fuel, ...	993.30	
Gas, ...	726.45	
Printing	428.75	
Scholarships, ...	1,200.00	
Labor, repairs, and improvements, ...	963.82	
Stationery and postage, ...	170.59	
Freight, diplomas, and sundries, ...	150.24	
Water rates, ...	44.02	
Furniture, ...	247.50	
Services of examiners and proctors, ...	91.50	
Proportion of expenses of Gymnasium, ...	1,222.62	
Insurance, ...	660.00	
Librarian's travelling expenses in Europe, . . .	351.41	
Advertising, ...	15.00	$38,851.27

TABLE No. VI.

MEDICAL SCHOOL.

RECEIPTS.

Income of the following Funds.		
Medical School, balance, ...	$2,892.62	
Jackson, ...	980.76	
Warren, for Anatomical Museum, ...	654.69	
Ward Nicholas Boylston, for Medical Prizes, .	208.28	
Ward Nicholas Boylston, for Medical Books,	158.36	
George C. Shattuck, ...	875.29	
Hersey Professorship, ⅔ income of the fund, . .	413.24	
Medical Library Fund, ...	110.78	
Quincy Tufts, ...	102.20	
David Williams Cheever Scholarship, ...	138.38	
Edward M. Barringer, ...	1,303.71	
Henry Harris, ½ of income, ...	764.94	
Mary W. Swett, ...	805.59	
Samuel W. Swett, ...	1,022.00	
Samuel E. Fitz, ...	93.56	
John Foster Income for Medical Students.		
Interest on unexpended balance, ...	15.69	$10,540.09
From students for instruction, ...	54,322.00	
" " for graduation fees, ...	1,620.00	
" " in Chemical Laboratory, breakage and chemicals, ...	1,581.48	
" " in Practical Anatomy, for use of material,	488.00	
" " for extra examination fees, ...	130.00	58,141.48
Amount carried forward, . . .		$68,681.57

TABLE VI, CONTINUED.

RECEIPTS.

Amount brought forward, ...		$68,
From Dental and Veterinary Schools for Laboratory instruction, ...		
Repayment of advances for the purchase of microscopes,		
Use of lecture room by Medical Society, ...		
Subscriptions to raise the standard of Medical Education,		9,
		$78,

PAYMENTS.

Boylston Medical Prizes.			
Prizes, ...		$650.00	
Advertising, ...		15.00	$
Warren Anatomical Museum.			
Insurance, ...		397.99	
Expenses and additions to collection, ...		188.70	
Edward M. Barringer Scholarship No. 1, . .	$300.00		
" " 2, . .	200.00	500.00	
Faculty Scholarships, ...		800.00	
Beneficiaries from **Foster** income, ...		105.00	1,
Chemical Laboratory, ...		2,052.50	
Physiological Laboratory, ...		400.00	
Anatomy, ...		1,750.00	
Pathological Laboratory, ...		100.00	
Bacteriological Laboratory, ...		200.00	
Obstetrics, ...		300.00	
Histology and Embryology, ...		200.00	
Materia Medica, ...		50.00	
Bandaging, ...		50.00	
Model of the brain, ...		75.00	
Hygiene, ...		50.00	
Salaries for instruction, ...		46,100.00	
Repairs and improvements, ...		1,581.48	
Instruments and apparatus, ...		201.30	58.
General Expenses.			
Advertising and catalogues, ...		1,155.00	
Books, from Library Fund, ...		200.54	
Fuel, ...		1,886.36	
Gas, ...		842.40	
Insurance, ...		335.00	
Printing, ...		408.90	
Services and wages, ...		2,756.10	
Stationery, postage, and sundries, ...		193.65	
Water rates, ...		599.60	
Furniture, ...		30.90	
Janitors and cleaning, ...		3,309.24	
Legal services, ...		173.91	
Freight, diplomas, &c., ...		58.99	
Supplies, tools, and material, ...		320.15	12,
			$68,

TABLE No. VII.

DENTAL SCHOOL.

RECEIPTS.

Income of Endowment Fund,		$195.36	
Term Bills, for instruction,		6,250.00	
Fees from Infirmary,	$2,844.20		
" " Laboratory,	1,117.35	3,961.55	
Gifts for present use,		160.00	
			$10,566.91

PAYMENTS.

Advertising and catalogues,	$400.71	
Care of rooms and cleaning,	1,089.76	
Freight, diplomas, &c.,	76.33	
Fuel,	260.39	
Gas,	113.62	
Supplies, apparatus, &c.,	1,765.03	
Interest on debt,	306.70	
Printing,	73.80	
Repairs and improvements,	277.97	
Salaries for instruction,	3,000.00	
Stationery and postage,	54.43	
Water rates,	77.00	
Medical School, for Laboratory instruction,	150.00	
Furniture,	25.90	
		$7,671.64

TABLE No. VIII.

LAWRENCE SCIENTIFIC SCHOOL, AND MUSEUM OF COMPARATIVE ZOÖLOGY.

RECEIPTS.

Income of the following Funds.

Lawrence Scientific School, balance		$10.94	
Professorship of Engineering,		1,983.04	
Abbott Lawrence,		3,144.49	
James Lawrence,		2,574.16	
John B. Barringer,		1,568.11	
Gray Fund for Zoölogical Museum,		2,555.00	
Sturgis Hooper,		5,110.00	
Agassiz Memorial. Interest,	$14,556.81		
From special investment,	653.21	15,210.02	
Teachers and Pupils,		388.05	
Humboldt,		395.57	
Permanent Fund for Museum of Zoölogy,		6,002.67	
			$38,942.05
Term Bills, for instruction,			5,140.68
			$44,082.73

TABLE VIII., CONTINUED.

PAYMENTS.

Paid on the order of the Faculty of the Museum of Comparative Zoölogy, from the following Funds.

Gray,	$2,555.00	
Agassiz Memorial, general expenses,	10,720.37	
Agassiz Memorial, advances repaid,	4,489.65	
Teachers and Pupils,	388.05	
Humboldt,	395.57	
Permanent,	6,002.67	
Sturgis Hooper.		
Professor of Geology,	5,000.00	
		$29,551.31
Salaries for instruction,	10,064.61	
Instruments and apparatus,	18.00	
Books, Engineering Department,	100.00	
Books and binding,	182.64	
Printing,	19.00	
Fuel,	338.80	
Gas, water, freight, and sundries,	45.75	
Janitor and cleaning,	271.74	
Labor and repairs,	174.02	
Expenses Chemical Laboratory (part of),	355.19	
Scholarships,	1,450.00	
Insurance	144.00	
Proportion of expenses of Gymnasium,	197.20	
Furniture,	62.85	
		13,423.80
		$42,975.11

TABLE No. IX.

OBSERVATORY.

RECEIPTS.

Income of the following Funds.

Observatory, balance,		$111.55	
Edward B. Phillips,		5,636.02	
James Hayward,		1,073.10	
Robert Treat Paine. Interest,	$5,783.19		
From special investment,	424.86	6,208.05	
Paine Professorship of Practical Astronomy,		2,555.00	
Uriah A. Boyden,		12,314.84	
Augustus Story,		683.72	
David Sears,		1,339.83	
Josiah Quincy,		590.46	
James Savage (½ of net income),		461.55	
Charlotte Harris,		102.20	
Thomas G. Appleton,		255.50	
New Endowment,		2,555.00	$33,886.82
Amount carried forward,			$33,886.82

Table IX., continued.

RECEIPTS.

Amount brought forward, . . .		$33,886.32
From sale of time signals, ...	3,148.33	
" " " grass, ...	20.00	3,168.33
Mrs. Henry Draper, on account of gift for special research (additional), ...	6,500.00	
Interest on unexpended balance, . . .	24.94	6,524.94
Miss Catherine W. Bruce, gift for a photographic telescope, ...	50,000.00	
Interest on balance, ...	62.50	50.062.50
Balance of old subscription for immediate use, . . .		25.00
		$93,667.09

PAYMENTS.

From the following Funds.		
Uriah A. Boyden, supplies, apparatus, services, &c., ...	$23,102.20	
Draper Memorial, supplies, apparatus, services, &c., ...	6,240.02	$29,342.22
Salaries and wages, ...	15,562.76	
Cleaning and care of Observatory, ...	342.20	
Gas, ...	49.80	
Instruments and apparatus, including repairs on same,	1,293.11	
Repairs and improvements on buildings and grounds, .	2,290.46	
Stationery, postage, and telegraphing, ...	485.08	
Fuel, ...	129.20	
Books and binding, ...	513.06	
Water rates, ...	94.50	
Printing, ...	2,377.45	
Freight, chemicals, and sundries, ...	564.40	
Furniture, ...	227.47	
Interest on advances, ...	100.80	
On account of advances to Observatory real estate repaid,	399.20	
Supplies and materials, ...	447.30	
Rent of house, ...	90.00	
Insurance, ...	375.00	25,341.79
		$54,684.01

Table No. X.

BUSSEY INSTITUTION.

RECEIPTS.

Interest on unexpended balance, ...	$244.97	
From **Bussey** Trust (½ net income), ...	7,704.91	
From **Bussey** Building Fund, ...	31.12	
Fees for instruction, ...	475.00	
Sale of wood, hay, and sundries, ...	1,232.79	
Board of horses, cattle, &c., ...	1,606.78	
Gift for present use, ...	100.00	$11,395.57

TABLE X., CONTINUED.

PAYMENTS.

For Salaries,	5,300.00	
Books,	26.93	
Fuel for school building,	39.95	
Services and wages,	1,947.34	
Horticultural Department, expenses,	684.38	
Repairs and improvements,	312.54	
Grain,	448.39	
Advertising,	77.95	
Horse shoeing,	109.91	
Seeds,	25.10	
Farming tools,	154.87	
Freight, telegrams, weighing hay, &c.,	81.80	
Insurance,	547.00	$9,755.66

James Arnold Fund.

Receipts.

Income of Fund,	$7,873.23

Payments.

19/20 of income carried to Arnold Arboretum,	$7,479.57

Arnold Arboretum.

Receipts.

Income of unexpended balance of Fund,	$224.38	
From James Arnold Fund,	7,479.57	
Sale of wood, grass, &c.,	1,594.28	
		$9,298.23

Payments.

Salary of Director and Assistant,	$3,000.00	
Expenses of Arboretum, services, labor, &c.,	6,107.78	
		$9,107.78

School of Veterinary Medicine.

Receipts.

Term bills, for instruction,	$2,186.19		
" " graduation fees,	150.00		
" " use of microscopes,	16.00	2,352.19	
Subscriptions to Veterinary Hospital,		1,930.00	
Fees from Hospital and Forge,		12,731.08	
Gift for present use,		25.00	$17,038.27

Payments.

Salaries and wages,	$8,875.51
Instruments and apparatus,	112.00
Rent,	1,280.00
Hay, grain, supplies, &c.,	3,932.32
Amount carried forward,	$14,199.83

TABLE X., CONTINUED.

Payments.

Amount carried forward, . . .	$14,199.83	
Printing, ...	38.98	
Stationery, postage, telephone, &c., ...	334.19	
Repairs and improvements, ...	198.29	
Fuel, ...	188.90	
Water, ...	41.40	
Gas, ...	153.66	
Freight, diplomas, and sundries, ...	176.67	
Taxes, ...	269.34	
Board of horses, &c. at Bussey Institution, ...	170.64	
Interest on advances, ...	1,026.79	
Advertising and catalogues, ...	223.50	
Medical School for Laboratory instruction, ...	140.00	
		$17,162.19

TABLE No. XI.

MISCELLANEOUS FUNDS.

Bussey Trust.

Receipts.

Net income from Real Estate, ...		$21,709.81

Payments.

Annuities, ...	$6,300.00	
One-half of the remaining income to Bussey Institution,	7,704.91	
One-quarter " " " Divinity School, .	3,852.45	
" " " " " Law School, . . .	3,852.45	
		$21,709.81

Gray Fund for Engravings.

Receipts.

Interest on Fund, ...	$317.45

Payments.

To the Treasurer of the Museum of Fine Arts, ...	$798.90

Annuity Funds.

Receipts.

Gore, interest, ...	$1,183.48	
Lucy Osgood, interest, ...	272.87	
Bemis, interest, ...	2,592.66	
		$4,049.01

Payments.

Gore, annuities, ...	$600.00	
Lucy Osgood, annuity, ...	420.00	
Bemis, annuity, ...	2,544.28	
		$3,564.28

TABLE XI., CONTINUED.

Price Greenleaf Fund.

Receipts.

Income of special investment,	$30,809.65	
Gain from change of special investment,	11,143.20	
		$41,952.85

Payments.

Scholarships,	3,000.00	
Beneficiary money transferred to College account,	13,904.83	
Balance of income for Library expenses,	13,904.82	
		$30,809.65

Daniel Williams Fund.

Receipts.

Interest on Fund,		$814.18

Payments.

Treasurer of Herring Pond Indians,	$267.33	
" " Mashpee Indians,	534.67	
		$802.00

Sarah Winslow Fund.

Receipts.

Interest on Fund,		$245.59

Payments.

Minister at Tyngsborough, Mass.,	$117.27	
Teacher at " "	117.27	
Commission on income credited to University,	6.01	
		$240.55

Walter Hastings Building Fund.

Receipts.

Interest on balance,	3,840.56

Payments.

On account of construction,	$135,572.87

Class Funds.

Receipts.

Class of 1834, income of special investment,	$40.00	
" " 1853, " " " "	105.00	
		$145.00

Payments.

To Secretary of the Class of 1834,	$40.00	
" " " " " " 1853,	105.00	
		$145.00

TABLE XI., CONTINUED.

Sundry Accounts.

Receipts.

Gospel Church Fd. (accumulating). Interest on Fund,	$175.58	
Robert Troup Paine Fd. " From special investm't,	1,459.30	
Advances to School of Veterinary Medicine, from general investments,	123.92	
Rumford Professorship, gain from change of special investment,	3,444.88	
		$5,203.68

Payments.

Annuity for **Class of 1802**,	$120.00	
Gurney annuities,	1,000.00	
Advances to Dental School repaid, in part,	2,895.27	
Unused balance of **Thayer** Scholarships returned to Trustee,	116.66	
		$4,131.93

GENERAL SUMMARY OF THE TABLES.

			Receipts.	Payments.
Table	I.	University,	$49,929.06	$52,552.20
Table	II.	College,	400,861.03	366,107.25
Table	III.	Library,	37,889.90	47,769.28
Table	IV.	Divinity School,	27,938.85	27,513.63
Table	V.	Law School,	45,714.15	38,851.27
Table	VI.	Medical School,	78,791.57	68,032.71
Table	VII.	Dental School,	10,566.91	7,671.64
Table	VIII.	Lawrence Scientific School and Museum of Comparative Zoölogy,	44,082.73	42,975.11
Table	IX.	Observatory,	93,667.09	54,684.01
Table	X.	Bussey Institution,	11,395.57	9,755.66
		James Arnold Fund,	7,873.23	7,479.57
		Arnold Arboretum,	9,298.23	9,107.78
		School of Veterinary Medicine,	17,038.27	17,162.19
Table	XI.	Bussey Trust,	21,709.81	21,709.81
		Gray Fund for Engravings,	817.45	798.90
		Annuity Funds,	4,049.01	3,564.28
		Price Greenleaf Fund,	41,952.85	30,809.65
		Daniel Williams Fund,	814.18	802.00
		Sarah Winslow Fund,	245.59	240.55
		Walter Hastings Building Fund,	3,840.56	135,572.87
		Class Funds,	145.00	145.00
		Sundry Accounts,	5,203.68	4,181.93
			$913,824.72	$947,437.29
				913,824.72
			Balance,	$33,612.57

Which is the net decrease of the Funds and balances, excluding gifts for capital account, as also shown on page 29.

ertificate of the Joint Committee of the Corporation and Overseers o Harvard College, for examining the Books and Accounts of the Treasurer entered in the Journal kept by him.

The undersigned, a joint committee of the Corporation and Overseers of Harvard College to examine the books and accounts of the Treasurer for the year ending July 31, 1889, have, with the assistance of an expert chosen by them, examined and audited the Cash book from pages 400 to 437, inclusive, and have seen that all the bonds, notes, mortgages, certificates of stock, and other evidences of property, which were received by him and on hand at the beginning of said year, are now in his possession, or are fully accounted for by entries made therein; they have also noticed all payments, both of principal and interest, indorsed on any of said bonds or notes, and have seen that the amounts so indorsed have been duly credited to the College.

They have carefully examined all notes, bonds, mortgages, and other securities invested during the said year, and are of opinion that all such investments have been judiciously made and are amply secured.

They have in like manner satisfied themselves that all the entries for moneys expended by the Treasurer, or charged in his books to the College, are well vouched; such of them as are not supported by counter entries being proved by regular vouchers and receipts.

They have also seen that all the entries for said year are duly transferred to the Ledger, and that the accounts there are rightly cast, and the balances carried forward correctly to new accounts.

(Signed,)

WILLIAM C. ENDICOTT, FREDERICK L. AMES,	*Committee on the part of the Corporation.*
CHARLES R. CODMAN, CHARLES HENRY PARKER, GEORGE B. CHASE, ISRAEL M. SPELMAN, JOHN L. GARDNER, ROBERT BACON,	*Committee on the part of the Board of Overseers.*

BOSTON, January 21, 1890.

ANNUAL REPORTS

OF THE

SIDENT AND TREASUR

N9

OF

HARVARD COLLEGE.

1889-90.

CAMBRIDGE, MASS.
SHED BY THE UNIVERSITY.
1891.

PRESIDENT'S REPORT FOR 1889-90.

To the Board of Overseers: —

The President of the University has the honor to submit the following Report for the academic year 1889–90; namely, from Sept. 26th, 1889, to Sept. 25th, 1890: —

Lists of the resignations and appointments of the year will be found in the Appendix (pp. 212–217).

The President and Fellows greatly regretted the withdrawal of Mr. Alexander Agassiz from their board at the end of the year. Mr. Agassiz has, however, served ten years as a Fellow — namely, from 1878 to 1884 and from 1886 to 1890 — beside giving the University invaluable service as Curator of the Museum of Comparative Zoölogy since 1875; so that the President and Fellows could only accede to his wish when the pressure of other cares made it necessary for him to diminish his work for the University.

Two members of the Board of Preachers withdrew at the end of the year, — Rev. George A. Gordon of the Old South Church, Boston, and Rev. Theodore Chickering Williams of All Souls Church, New York City. Mr. Gordon began his service with the first Board of Preachers in September, 1886; Mr. Williams had served two years; both gave time and strength to the work with generosity, and with strong faith in the new method of administering the University Chapel. Their places were filled by the election of Rev. Brooke Herford of the Arlington Street Church, Boston, and Rev. Henry Van Dyke, D.D., of the Brick Church, Fifth Avenue, New York. For the year 1890–91 the Board is composed of one Unitarian, two Episcopalians, one Congregationalist, and one Presbyterian. Only two out of the five Preachers are graduates of the University. The interest of the students, and of the community about the University, in the Chapel services increases from year to year.

The most important events of the year were the dissolution of the Faculties of Harvard College and of the Lawrence Scientific School, and the creation of the single Faculty of Arts and Sciences to have charge of the College, the Scientific School, and the Graduate School. These changes were wrought by amending materially statutes 5, 6, and 7, and making corresponding changes in statutes 1, 9, and 12. The amended statutes are printed by the side of the former statutes in the Appendix (pp. 218–220). Beside establishing the Faculty of Arts and Sciences, they provided that a Faculty might delegate any of its powers relating to ordinary matters of administration and discipline to administrative boards consisting of members of the Faculty; and they also created two additional deanships, one for the Faculty of Arts and Sciences, and the other for the Graduate School. These important measures were elaborated by the College Faculty in the course of a discussion which lasted several months, and were reported to the President and Fellows in March last in the form of proposed amendments to the statutes, and of a proposal that under the amended statutes, if adopted, three administrative boards should be appointed within the Faculty of Arts and Sciences, one for Harvard College, one for the Lawrence Scientific School, and one for the Graduate School. The statutes proposed by the Faculty were modified in certain details, first by the Corporation, and then by the Overseers, and thus improved were finally adopted on the 21st of May last. On the 9th of June, in conformity with statute 6 and in execution of the proposal made in March by the College Faculty concerning the appointment of three administrative boards, the President nominated an Administrative Board of sixteen members for Harvard College, an Administrative Board of seven members for the Lawrence Scientific School, and an Administrative Board of ten members for the Graduate School, and the boards so nominated were duly appointed by the Corporation with the consent of the Overseers. Later in the same month four Deans were duly appointed under statute 7 as follows: Professor Charles Franklin Dunbar, Dean of the Faculty of Arts and Sciences; Professor James Mills Peirce, Dean of the Graduate School; Professor Clement Lawrence Smith, Dean of Harvard College; and Professor Winfield Scott Chaplin, Dean of the Lawrence Scientific School. The new organization being thus completed, so far as the action of the Corporation and Overseers was concerned, the new Faculty voted on June 24th "to delegate with full powers, until the further order of this Faculty, to the Administrative Boards of the Graduate School, the College, and the Scientific School respectively, the enforcement of the regulations of the Faculty relating to each of those departments, and the conduct of all ordinary matters of administration and discipline." The provisional dispositions made by the Faculty of Arts and Sciences for completing the work of the year 1889–90, and the preparations made by it for the work of the ensuing year, are described in the subjoined report of its Dean (p. 38).

The gradual development of this plan of reorganization in the minds of the College Faculty and the arguments for it are fully set forth from the Faculty's point of view in the subjoined report of the Dean of Harvard College (pp. 103–111). Three ends were accomplished by the combined changes: 1. The conduct of the whole body of instruction in arts and sciences, from the most elementary courses to the most advanced, was placed in the hands of one responsible Faculty; 2. this Faculty was delivered from the care of administrative details; 3. each of the three departments in charge of this Faculty was provided with a distinct administrative board, at the head of which is a Dean. The Graduate School has never before been so effectively organized; the Scientific School has been really governed for years by a Faculty which was only a large committee of the College Faculty; and as a matter of fact the College Faculty, or members thereof, have done all the work of developing the instruction in arts and sciences since 1872, whether the courses were intended for graduates, college students, or scientific students. The new statutes express the natural legislative outcome of the development of the whole department of arts and sciences during the past twenty years; and the result is believed to be an organization practically convenient, historically legitimate, and philosophically just. No lines are drawn where natural demarcations do not exist; the selection and conduct of courses of instruction which should be carefully graded in unbroken series from the entrance of the Freshman to the graduation of the Doctor of Philosophy are committed to the one only competent academic body; and yet all desirable or convenient distinctions of policy or discipline between the College, the Scientific School, and the Graduate School are maintained and even emphasized.

An interesting table of the schools and colleges from which young men have entered Harvard College proper during the past ten years will be found in the Appendix (pp. 221–226). It appears that the number of public schools which from time to time send pupils to Harvard College is slowly increasing. In the ten years 1881–1890, there were ninety-six such schools; in the ten years 1876–1885, there were eighty-two. In the year 1890, thirty-four public schools sent pupils into the College, and of these thirty-four twenty-four were Massachusetts High or Latin Schools. The number of schools and colleges which contribute to make up one of the regular classes in Harvard College is surprisingly large. Thus in 1890, no fewer than 122 schools and colleges contributed the 348 persons who entered the College from schools and other colleges. The largest number sent by a single school was twenty-eight, and only seven schools sent more than ten pupils. From these seven schools 107 persons entered the College. The number of other colleges and universities from which students enter the regular classes of Harvard College is increasing somewhat rapidly. In 1890, the number of these colleges and universities was forty-five, and they supplied sixty-three students. (Compare the report of the Dean of Harvard College, p. 44.)

The following table gives the number of young men who entered Harvard College as regular students in any one of the four classes (special students are not included), in each of the twenty-five years mentioned, from public, endowed, and private schools, from private tuition, and from colleges respectively, with the total number in each year, and the percentage from public schools. The percentage from public schools is unfortunately diminishing; but the percentage from colleges and universities is increasing, and the reduction in the percentage from public schools is almost accounted for by the increase in the percentage from colleges. On the whole, the private schools have gained on the public schools and the endowed schools during the past twenty-five years. This is particularly the case in cities, as for example in Cambridge, Boston, New York, Philadelphia, Chicago, Cincinnati, and St. Louis. In all these cities private day-schools of high grade have been uccessfully established in the face of free public schools.

Year.	From Public Schools.	From Endowed Schools.	From Private Schools.*	Private Pupils.*	From Colleges.†	Total.	Percentage from Public Schools.
1866	45	38	21	36	4	144	.3125
1867	42	41	39	47	7	176	.2386
1868	39	34	30	38	5	146	.2671
1869	60	47	22	26	4	159	.3773
1870	75	41	33	41	8	198	.3787
1871	70	44	42	39	8	203	.3448
1872	50	66	30	30	7	183	.2732
1873	72	66	37	46	6	227	.3171
1874	54	57	25	46	18	200	.2700
1875	80	79	32	53	14	258	.3100
1876	51	75	35	49	15	225	.2266
1877	86	64	31	46	12	239	.3598
1878	80	74	36	28	14	232	.3448
1879	72	72	47	38	16	245	.2938
1880	69	67	41	42	14	233	.2961
1881	69	65	25	48	23	230	.3000
1882	82	70	51	53	25	281	.2918
1883	65	85	62	36	20	268	.2425
1884	63	75	73	37	38	286	.2203
1885	73	71	63	30	27	264	.2765
1886	96	65	70	36	35	302	.3179
1887	78	78	78	33	48	310	.2516
1888	94	77	69	31	60	331	.2840
1889	98	68	99	33	54	352	.2756
1890	95	86	82	54	85	402	.2363

A table which shows the ages at which the Freshmen ntered the College in every year from 1856 to 1890 inclusive is printed in the Appendix (p. 227). Persons who entered with advanced standing are included in the table by placing them in the year in which they would have entered the College had they begun as Freshmen. The last three years are, therefore, necessarily incomplete; for persons who hereafter enter with advanced standing are still to be incorporated into those classes. The average age given in the last column but one is not absolutely accurate to days, but is nearly so. It is noticeable in the table that no one now enters under sixteen, and very few over twenty-one years of age; but that the average age at admission, which reached nineteen years ten years ago, has not diminished during the last decade. The College Faculty having formally proposed on March 25th, 1890, to advise parents and teachers that eighteen is a suitable age to enter Harvard College, and having informed the President and Fellows of their intention, the President and Fellows transmitted the proposal of the Faculty, with other proposals from the same body, to the Board of Overseers. On the 4th of June the Overseers passed the following vote, which was in due course received by the President and Fellows and was by them transmitted to the Faculty of Arts and Sciences. "*Voted*, that, in the opinion of the Board of Overseers, the present average age of admission to the Freshman Class — about nineteen years — is undesirably high, and that the actual age of admission might with advantage be reduced, so that, for the great majority of the class, it should be between seventeen and eighteen years." Thereupon the Faculty (June 24th) authorized the President and the Dean of Harvard College to draw up and issue a public circular based upon the votes of the Faculty and the Overseers. The circular issued was in the following terms: —

---

* The discrimination between private schools and private tutors is not accurate. The number of private pupils as given in the table is a little too large. When a andidate who was prepared at a school or college is rejected in June, he somemes studies three months with a private tutor and is admitted in September. He then counts on the College admission record as a private pupil.

† Beginning in the year 1881, students have each year entered the regular asses of Harvard College from other departments of the University. Thus, in 389, twenty-one such students entered the College, and in 1890, twenty-two.

To Parents and Teachers of boys who intend to enter Harvard College:

In the opinion of all the College authorities the present average age of Freshmen entering Harvard College (about nineteen years) is undesirably high.

While recognizing the fact that unfavorable circumstances necessarily retard, beyond the most advantageous age, the preparation for college of many young men who derive great benefit from a college course, the Faculty believes that boys who have regularly attended a good school ought to be fully prepared to enter with profit upon their college course by the time they are eighteen years old, or even before that age. The Faculty thinks it unwise, as a rule, for parents or guardians to keep in school boys who are really prepared for college, or to keep out of college boys who have passed the admission examinations, unless because of ill-health or of unusual immaturity of character.

The Faculty respectfully requests the co-operation of all teachers who prepare boys for Harvard College in the effort to reduce the average age of admission.

The adoption by most American colleges — by all the New England colleges except Harvard and Yale — of the practice of admitting school graduates without examination, on the certificates of their schools, does not seem to diminish the resort to the strict admission examinations which are the only gate to Harvard College for candidates for the degree of A.B. The number of applicants increases from year to year. The fullest possible information about the examinations will be found in the Dean's report (pp. 46–57); and in the tables there given can be traced the slow but sure effect of the wide choice of subjects permitted to candidates for admission on the development of instruction in the secondary schools. It clearly appears that the teaching of modern history, modern languages, mathematics, physics, and chemistry is being fostered as never before; but that the amount of change from year to year is not considerable. Only 31 candidates, or 8¼ percent of the whole number, offered the permissible substitutes for Greek in 1890. Three of these 31 persons came from colleges, and five were prepared by private tutors; of one the place of preparation is unknown; the remaining 22 came from the following schools: From the Boston English High School, the Roxbury Latin School, and A. Hale's private school, Boston, four each; from Phillips Exeter Academy and the Brooklyn Latin School, two each; and from the Belmont School, Mass., the Harvard School of Chicago, the Omaha High School, Phillips Andover Academy, White and Sykes's private school, Cincinnati, and the Wm. Penn Charter School, Philadelphia, one each. It is probable that the substitutes for the elementary Greek require of the candidate more time and labor than the Greek requires; and since the capacity and taste for mathematics and physical science are much less common than the capacity and taste for languages, there is no danger that boys at school will be drawn away from the study of Greek by any but legitimate inducements. The number of different combinations of admission subjects presented by the candidates was larger at the examinations of 1890 than at either of the two preceding examinations, namely: 88 in 1890 against 62 in 1889 and 76 in 1888; but this variety of combination causes no inconvenience whatever to the College, and is of great service to the candidates and the schools.

The College Faculty gave much time during 1889–90 to the preparation of the Announcement of Instruction for the year 1890–91, which was to be the first list of courses of instruction given under the direction of the new Faculty of Arts and Sciences. This Announcement was arranged in a new way, intended to bring out more distinctly than former Announcements had done the ample provision made for graduates in arts or science and other advanced students. In fourteen departments of instruction the courses were grouped under three heads, namely: courses primarily for undergraduates; courses for graduates and undergraduates; and courses primarily for graduates. In three departments the first group was lacking; in one, the last; in two, the first and second; and in three, the middle group. The new Announcement also described more fully than preceding Announcements had done three forms of instruction for advanced students which have been gradually developed by different instructors and departments during the past eighteen years, — the courses of research, the seminary, and the conference.

In making these changes in the Announcement — changes which were of personal interest to most of the instructors — the several departments, each in its own sphere, were obliged to hold consultations, reconcile differences of opinion and practice, and produce an arrangement of courses in each department conformable to the general scheme of the Faculty. The excellent result is prophetic. The department of instruction, — as for example the department of German, of mathematics, or of botany, — is likely to become a more and more important unit of academic organization within large Faculties. A department in this sense comprises all the instructors in a given subject who are members of the Faculty. These instructors have many common interests, as well as some divided or conflicting interests; and in all matters relating to instruction in the subject with which the department deals, they are the natural advisers of the large and heterogeneous Faculty. The conference is an institution which tends to strengthen and unify a department as an organization; so is the departmental library and reading-room which is now well established in several departments; and so is also the departmental publication fund, which is thus far secured only in three departments, — political economy, the classics, and history.* The development of departmental activity and authority within the Faculty of Arts and Sciences gives assurance that the organization of separate degree-giving schools of particular arts or sciences, such as other American universities have organized, will be unnecessary at Harvard, and that the central Faculty, freed by its subordinate Boards from the charge of administrative details, will be able to treat wisely and efficiently, with the help of its departmental and other standing committees, the fundamental subjects of admission, residence, instruction, aids and honors, examinations and degrees, in the best interests of a body of students soon to be numbered by thousands.

As illustrations of the numerous and important changes made in the nature, arrangement, and description of the courses offered by single departments for 1890–91, there are printed in the Appendix (pp. 228–237) the new announcements of the departments of philosophy, history, and geology, side by side with the announcements of the same departments for 1889–90. But as these illustrations can give at best but an incomplete idea of the work done by the College Faculty in enlarging and rearranging its instruction, the attention of the Overseers is especially invited to the full account given by the Dean (pp. 58–102) of that work, and of the aims and expectations which influenced the Faculty.

---

* Since the beginning of the current year Mr. Wm. M. Prichard, of New York (H. U. 1833), has given to the department of history a publication fund of $10,000, to be called the Henry Warren Torrey fund.

All the College authorities — Corporation, Overseers, and Faculty — have long been anxious to improve and amplify the training given by the College in those arts which are indispensable in a democracy for gaining a just influence over the public mind and conscience — the arts of writing and speaking with clearness, terseness, and force. To this end, as well as for the development of literary taste and skill, they have endeavored from year to year to increase the amount of instruction in writing English, and to improve the quality of the instruction; they have added to the elementary required courses graded elective courses in English composition; they have maintained a half-course in oral discussion; and for the year 1890–91 they have provided a new elective course in argumentative composition. By successive steps, the instruction in rhetoric and composition has been carried back into the Freshman year (1884–85); the required writing of themes into the Sophomore year (1886–87); and the required writing of forensics into the Junior year (1890–91). The instruction in argumentative composition has been greatly improved by providing more thorough criticism, and requiring the preparation of briefs. These changes in the arrangement of the more elementary work have made the advanced courses earlier accessible and therefore more useful, and have provided a better preparation for them. Further steps in the same direction are doubtless desirable; but much has already been accomplished. Year by year the Corporation has appropriated more and more money to secure the proper criticism and correction of all written exercises; and the increase of expenditures on the English department has more than kept pace with the increase in the number of students. In many elective courses outside of the English department, and particularly in the advanced courses in philosophy, history, economics, and social science, the writing of theses is made an important part of the work. In the various seminaries and conferences, the participants learn to expound systematically to a critical audience the subjects which they have been required to investigate. In the course of instruction in oral discussion the subjects for debate are all fresh topics in political science or in history. Simultaneously, the instruction in ethics, political and social science, and history has been much increased; so that students may not only be trained to express their own thoughts well, but also may learn what the thoughts of the world have been and are on these great themes. Such are some of the means by which it is hoped to prepare some graduates of the College to deal effectively in later life with public questions.

The last part of the Dean's report (pp. 103–111) is devoted to a lucid exposition of the action which the College Faculty took in 1889–90 on the subject of shortening the College course,— a subject which engrossed the attention of the Faculty for the larger part of five months. The Dean describes in full the action taken on this subject, because it was an important part of the Faculty's work for the year. The Dean also states clearly wherein the proposed action was really new, and wherein it only gave concise formal expression to existing practices. The Board of Overseers not having taken final action on the Faculty's proposals, the future policy of the College on this important subject remains undetermined.

The College Faculty held 36 meetings in 1889–90, and the Faculty of Arts and Sciences 6 meetings, making 42 meetings in 36 weeks of term-time. So many meetings, devoted to the discussion of difficult and interesting subjects, make a serious drain on the time and strength of teachers, and interfere sensibly with their regular work. It is hoped that when the new organization gets into good working order, the number of Faculty meetings can be much diminished.

The number of persons who take second-year honors and final honors does not increase; on the contrary, it diminishes relatively to the number of students. To obtain second-year honors, about half the student's time during the first two years must be given to classics, mathematics, or physics; to obtain final honors, about one third of the student's time during the whole college course must be devoted to the general subject in which honors are sought. These are only approximate estimates; for the requirements for honors vary considerably in the different departments in which they may be obtained. The natural inference from the facts given in the following tables would be, either that a very small proportion of the students wished to specialize their studies to the moderate extent de-

SECOND-YEAR HONORS IN —		1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Classics	Highest Honors	4	6	7	6	2	5	4	4	5	4
	Honors	18	18	17	7	13	12	9	10	16	12
Mathematics	Highest Honors	4	3	5	2	3	3	1	0	4	1
	Honors	0	2	3	3	5	4	3	2	2	2
Physics	Highest Honors						1	1	0	0	0
	Honors						3	1	2	0	0
Totals		26	29	32	18	23	28	19	18	27	19

FINAL HONORS IN —		1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Ancient Languages	Highest Honors			1							
	Honors	1									
Semitic	Highest Honors				1						
	Honors										
Classics	Highest Honors	1	2	1	4	1	1				
	Honors	8	8	6	6	4	2	4	4	4	10
Modern Languages	Highest Honors			1			1		1		2
	Honors						1		1	1	1
English	Highest Honors									1	
	Honors					3			1		4
Philosophy	Highest Honors		1		2	1	1				
	Honors	4	1	1					2	3	
History	Highest Honors	1	3	2	1			1	1	2	1
	Honors	2	4	3	3	2	1	3	1	3	2
Political Science	Highest Honors			1	2		1	1	1	1	1
	Honors			1	4	1		4	5	2	4
Music	Highest Honors	1	2				1			1	
	Honors		1		2	1			1	2	
Mathematics	Highest Honors	2	2		1		1		1		
	Honors		2	3	1	1	3			1	1
Physics	Highest Honors	1			1						
	Honors					2	3	2			1
Chemistry	Highest Honors				2		1		1	2	1
	Honors	4	3		1		2	1	1		
Natural History	Highest Honors	1						1			
	Honors	2		2	5	1	1	5	1	2	
Totals		28	21	22	36	17	20	22	22	25	28

manded by the regulations concerning honors, or that the other requirements for both second-year and final honors were in some way unreasonable.

Those distinctions at graduation which require no specialization of studies at all (the three grades of the A.B. with distinction), or only that small amount involved in taking three courses in one subject (honorable mention), are obtained by large numbers of students.

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Persons receiving the A.B. .	182	177	204	195	181	207	206	234	212	282
Summâ cum laude	14	10	9	22	14	19	9	18	14	12
Magnâ cum laude	32	29	45	43	46	35	46	15	21	47
Cum laude	55	48	42	53	40	56	64	65	48	58
Totals	101	87	96	118	100	110	119	98	83	118
With honorable mention . .	109	87	125	114	92	95	115	120	126	149

It is possible that the existence of these more popular distinctions diminishes the demand for second-year and final honors; and that the Faculty's estimate of the relative significance and value of the different sorts of academic distinction is not the same as the students' estimate. Even within the Faculty there are two opinions about the wisdom of seeking honors, except by young men who mean to teach. For young teachers it is undoubtedly an advantage to have taken honors in the subjects which they aspire to teach.

The number of Special Students in Harvard College has not increased for four years past. The Faculty Committee on Special Students scrutinizes carefully all applications for admission, and refuses a considerable proportion. It is the practice of the Committee to reject candidates not recommended for admission by their former teachers, unless they can be admitted for exceptional reasons which their teachers find to be good. It is believed that this practice affords adequate support to the discipline of the preparatory schools. The majority of the Special Students are registered as such for only one year. From ten to fifteen percent become regular students. The Committee exercises a careful supervision over all Special Students throughout the year; and has been much aided in this work by the measure which the Faculty took in the spring of 1889 to secure more frequent examinations, the prompter return of absences, and the quicker detection of cases of neglect of duty. On the whole, Special Students are more strictly dealt with than regular students; and it is right that they should be, for they have not given the guaranties which regular students give, either as to scholarship or as to character. They are, however, an important class of students, to whom the College renders useful service.

Under the general direction of the Committee on the Regulation of Athletic Sports, two important and long-sought improvements were made in 1889–90 in the selection and management of the various "teams": 1. None but *bona fide* members of the University taking a full year's work, and none but amateurs by the accepted definition, were allowed to represent the University in any public athletic contest; 2. Freshmen were properly defined to be first-year students, either regular or special, of the College or Scientific School. At the opening of the current academic year another very useful step was taken, — a competent physician was employed to supervise the training. Some improvement was also made during the past year in the business management of the various teams; but much remains to be done in this direction. The improvement was the result of the election of a Graduate Treasurer, under articles of agreement entered into by the various athletic associations of the University in November, 1889, under which a Graduate Treasurer is to be elected every year by the Committee on the Regulation of Athletic Sports, for all athletic associations that use the grounds or buildings of the University. There is such looseness and confusion in the existing methods of purchasing, incurring obligations, and accounting, that more than one year will be necessary to establish a proper system. It is the general opinion among those who have examined the natter that economy and efficiency would be promoted by utting all the money and all the business affairs of the several ssociations into the hands of the Graduate Treasurer, who hould be authorized to employ one general agent or manager esides the bookkeeper provided by the present articles of greement. The probability is that with good management very sport would be well supported, without any subscriptions hatever unless for expenditures which might fairly be called xtraordinary.

A good tendency is manifested towards a reduction in the umber of intercollegiate ball-games, it having already been emonstrated in boating and foot-ball that one intercollegiate atch is sufficient to maintain all necessary interest in home ractice. From the educational point of view, the main object f intercollegiate races and competitive contests is to increase he number of students who habitually take part in manly ports; and the real test of the usefulness of intercollegiate atches is, therefore, the amount of activity in the several ports on the home grounds. The aim of any single large ollege should always be to produce not one but many com-etent crews and teams; so that home practice may be better an any attainable outside practice in preparation for the preme effort. The best number of intercollegiate contests is e smallest number which will maintain a keen interest in ach sport. A strict application of this principle would ex-ude intercollegiate matches between Freshmen.

Mr. Geo. W. Weld's boat-house was finished and equipped the spring of 1889, and immediately proved to be both pop-ar and serviceable. To regulate the use of this excellent rovision, the "Rowing Club" was successfully organized, d its membership fees were more than sufficient in amount meet all the running expenses of the establishment. The roperty is held by Trustees; but the management of the Club in the hands of its members.

In June, 1890, Major Henry L. Higginson of Boston sent a tter to the Corporation (Appendix, p. 238) in which he gave the University without conditions a tract of land in Brighton City of Boston), containing about 21 acres of upland and 10 cres of marsh, and expressed two wishes in regard to his gift, — first, that the ground should be used for the present as a playground, and should be replaced by another playground if required in the future for other uses; and secondly, that it should be called "The Soldier's Field," and be marked by a stone bearing the names of six of his friends who gave their lives for their country in the Civil War, —

JAMES SAVAGE, JR.,
CHARLES RUSSELL LOWELL,
EDWARD BARRY DALTON,
STEPHEN GEORGE PERKINS,
JAMES JACKSON LOWELL,
ROBERT GOULD SHAW.

The Corporation gratefully accepted this munificent and affecting gift, and will count it a privilege to carry out the wishes of the giver. In order to consolidate into one block the holdings of the University on the south side of the Charles River, they immediately bought 12½ acres of marsh which lay between The Soldier's Field and the 70 acres of marsh which were given to the University twenty years ago by Henry Wadsworth Longfellow and a few of his friends. The University now owns an area of about 21 acres of upland and 93 acres of marsh on the south side of the river, with a long frontage on North Harvard St., just across the Brighton bridge, and a right of way to Western Avenue. At a moderate cost per acre the whole of the marsh could be diked, and converted into a garden or park. On the portion given by Mr. Longfellow and his friends, there are certain restrictions as to buildings; on the rest there are no restrictions whatever.

The Foxcroft Club, which was organized in 1889 to maintain reading-rooms, toilet-rooms, and a cheap restaurant in the lower story of the large house on the northeast corner of Kirkland and Oxford Streets, has already proved itself very useful to the poorer students of the University. In 1889–90, the membership was limited to 120, and the average number of students who took their meals at the Club was about 65. These 65 persons paid on the average $2.75 a week for twenty-one meals à la carte. For the current year the membership has been increased to 200, and the Club is full. The prices of food have been a little advanced this year to cover the expenses of accommodating the increased number; so that the average payment per week may rise to $3.00. Some members — chiefly those who sleep at their homes — take only luncheon, or occasional meals, at the Club. The objects in view when the Club was started have been fully attained, and for an unexpectedly large number of persons.

At the close of the year 1889–90, a Loan-Furniture Fund was subscribed by a few officers and students of the University, and Seniors who were leaving Cambridge were invited to give furniture to be lent to incoming students. From these sources thirty rooms were supplied with good furniture at an annual rent of $5.00 for new furniture and $1.65 for second-hand, beside a deposit of $2.50 in the case of new furniture, and of 0.65 in the case of second-hand, made as security against damage. The Fund will probably be enlarged during the current year. This is another effort to reduce the cost of education at Harvard College, and particularly to help the new-comer whose means are narrow.

In the interest of the class of students for whom the Foxcroft Club and the Loan-Furniture Fund were established, there is great need in Cambridge of a well-situated building containing a large number of simple rooms which could be let at $50 a year. At present the University has but 25 rooms which are let at $50 or less, the prices including the daily care of the rooms. The building should be practically fire-proof, and should be provided with fire-places, warmed halls, and the best sort of bathing-rooms — namely, asphalt-lined closets supplied with hot and cold water and flexible hose — but it should be as plain, and as easy to keep in wholesome condition, as possible. There are plenty of rooms in Cambridge, suitable for students, at $100 a year and upwards; but comfortable rooms at $50 a year or less are scarce. In order to build up a great university at Cambridge all the conditions of life must be made as favorable as possible for the ambitious student of narrow means. In Memorial Hall or the Foxcroft Club such a student can get cheap and wholesome board; but cheap and wholesome lodging he cannot always find within a reasonable distance of the College Yard.

The Lawrence Scientific School has within three years so added to its numbers that it is larger in the current year than t has ever been before, since its foundation in 1847. The number of students was 35 in 1888–89, 65 in 1889–90, and 88 in 1890–91, the numbers being those given in the annual catalogues, and being therefore a little below the numbers annually reported by the Dean. There is reason to believe that this growth will continue. The five courses of instruction which lead to the degree of B.S. are all thorough and well-arranged; the admission-examination is within the capacity of any graduate of a good high school; and through the intimate association of the School with the College its students enjoy all the privileges in Cambridge which College students enjoy.

The system of studies in the School is essentially the group system, as distinguished from the elective system; for it is the aim of the School to train specialists of five kinds — namely: civil engineers, electrical engineers, chemists, geologists, and biologists — and each kind needs not only severe mental discipline, but also sound information concerning a definite group of subjects. The teachers are the same teachers who give instruction to College and Graduate students in the subjects composing the five groups.

The Cambridge Manual Training School, built and maintained by Mr. Frederic H. Rindge, provided excellent instruction in 1889–90 for students of the Scientific School in the use of various hand and machine tools; and the arrangement has been renewed for the current year to the advantage, it is hoped, of both Schools.

Two new endowed professorships would greatly strength the School, and be of much use in other departments of t University, — one a professorship of theory and practice motors and machinery, the other a professorship of architect The first would reinforce in a very serviceable way the de ments of physics, mathematics, and engineering; the se would find its natural allies in archaeology, history, lettres, and particularly in the history of the fine arts. profession of architecture there will always be need o men well-trained in history and literature, as well as principles of design and the rules of construction. Ins in the accepted principles of architecture would be appropriate for candidates for the degree of Bachelor as instruction in the private life of the Greeks or Romans, or in the history of tariff legislation in the United States, or in the morphology of plants and animals.

The eight scholarships in the Scientific School of $150 each, which were established ten years ago for the benefit of graduates of Massachusetts normal schools, had never been all taken in any one year. Indeed, the number of incumbents had been small from the beginning. The Corporation, therefore, in 1889–90 opened them to graduates of any reputable normal schools in the United States, and there is now a prospect that they will soon be suitably filled.

The volume and variety of instruction in arts and sciences offered to graduates increase steadily; and the number of students, and the amount of tuition-fees received from them, increase also, but not proportionately to the increase of instruction.

	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
Number of students,	72	70	96	95	107
Amount of tuition-fees,	4356.66	6238.33	8397.50	9200.	9240.

The number of graduates of other colleges who come to Harvard University to pursue their studies in arts or sciences has much increased of late years; but many of them register in the College instead of the Graduate School, although they can obtain the degree of A.B. just as well in the Graduate School. Thus, at the beginning of the current year, there were 97 graduates of other colleges registered with the Faculty of Arts and Sciences, but of these only 60 were registered in the Graduate School, 37 being registered in the College — 31 as Seniors, 5 as Juniors, and 1 as a Sophomore. (Compare the report of the Dean of the Graduate School, p. 113). Some of the graduates of other institutions, who enter the College rather than the Graduate School, do so because they think that their chance of obtaining a scholarship, or other beneficiary aid, is better in the College; but others who exhibit this preference are not applicants for any form of pecuniary aid. The studies of the young men are the same whether they are registered in the Graduate School or in the College, and it makes no difference to their instructors where they are enrolled. The Faculty is chiefly anxious that the wishes of the institutions from which these students come should be properly considered by them in deciding whether to join the College or the Graduate School.

It has heretofore been customary to award each of the travelling Fellowships for three successive years to the same incumbent. In order to give the benefits of a year, or two years, in Europe to a larger number of persons, and to promote among advanced students (whether Bachelors of Arts of Harvard University or of some other institution) the practice of studying for a year, or two years, at this University before going abroad, the Academic Council in May last adopted the method of appointing graduates to travelling fellowships with notice that the appointment was for one year only, or with notice that the appointment would probably not be renewed more than once. Graduates of other colleges may, hereafter, have a better chance of winning these valuable prizes than they have had heretofore; for if they prove their good quality during a two-years' membership of the Graduate School, they may be eligible candidates for a travelling fellowship during one subsequent year. One such appointment was made last spring.

The Dean's cogent statement concerning the proper place and function of the Graduate School (p. 117) is commended to the attention of the Overseers.

The Divinity School deals in a strictly scientific spirit with those branches of philology, archaeology, history, philosophy, ethics, and literature which should interest all educated ministers; and receives students from a considerable variety of Protestant denominations. The Dean points out (p. 123) that within eight years the graduate department of the School has increased in a particularly hopeful way, and is larger during the current year than ever before. The same may be said of the School as a whole; it never had before so many students as it has this year. On the other hand, the proportion of the graduates of American colleges who enter the ministry remains, as for many years past, far too small, considering the influence and dignity of the profession, the keen demand for able and well-trained ministers, and the happy conditions of the educated and faithful minister's life both in city and country.

The School has had two annual deficits in succession, amounting to $2354.78, partly caused by improvements made in Divinity Hall, and partly by new expenses in the library. At present, the fixed charges absorb almost the whole income, so that any extraordinary expense may cause a deficit; but on looking back a few years one finds that the resources of the School are not diminishing but increasing. Thus its income in 1889–90 was larger by $3208.75 than in 1884–85, and larger by $9740.20 than in 1879–80. The Corporation act on the belief that persons will continue to appear from time to time who wish to foster theological studies, pursued with reverence but in perfect freedom, by adding to the endowments of this department of the University.

The recent increase of tuition-fees in the Law School warranted an increase in the amount of instruction offered. Accordingly, arrangements were made in the spring of 1890 to double the amount of instruction in criminal law, partnership, and corporations. An anonymous gift of $1000 a year for five years enabled the Corporation to provide also a new course on the peculiarities of Massachusetts law and practice. An assistant professor was added to the Faculty. The addition to the salary list in consequence of these changes was $3750. Since the School had a surplus of $10,693.93 in 1889–90 without counting the gifts for immediate use, and the increase in the number of students still continues (279 in 1890–91 against 254 in 1889–90), it is clear that still further additions to the instruction can be made for the next year.

The average age of college graduates when admitted to the Law School has been 23 since 1873–74, the average age of non-graduates being 22 (Dean's report, p. 131). The proportion of Harvard Bachelors of Arts in the Law School is increasing; that of Bachelors of other institutions and that of non-graduates are diminishing (Dean's report, p. 130). The practice of entering the School with one year's advanced standing is slightly on the increase, while the practice of obtaining the degree without passing the third year of the course at the School is apparently dying out.

Experience having shown that the existing regulations concerning the admission and continuous registration of special students permitted some persons to maintain a nominal connexion with the School who took no part whatever in its work, the Faculty checked this evil by adopting new regulations as follows: —

> "Persons who are not candidates for a degree may enter the School as special students at any time without examination, and avail themselves of its advantages in whatever manner and to whatever extent they see fit. They must, however, if not college graduates, produce certificates of good moral character, and give two references for further information.
>
> A special student who has been in the School during any part of an academic year must, in the regular examinations held at the end of the year, or held in the following September, pass an examination in at least three subjects.
>
> No student, whether a candidate for a degree or a special student, who has not in any year passed an examination in at least three subjects will be allowed, unless by vote of the Faculty, to continue as a special student in the School."

It is believed that these regulations will put an end to an abuse, without interfering with any of the proper uses of the University statute concerning persons not candidates for a degree (statute 10).

The attention of the Overseers is especially invited to the Dean's careful comparison of the condition of the Law School in 1869–70 with its actual state. His description of the library and of the means by which it has been brought to its present admirable condition will interest any one who habitually uses a professional library. Within the period covered by the Dean's survey, the School has had two great benefactors, the giver of Austin Hall, and the founder of the new professorship. It has also received from a considerable number of givers a Book Fund which now amounts to $42,021.25. These benefactions, however, came rather late in the transformation of the School, and were rewards and encouragements, rather than originating impulses. It is to the wisdom and courage of the Dean and Faculty, and to the prompt demonstration of the efficacy of the School's methods which its young graduates have supplied, that the School owes its remarkable development.

The important event in the Medical School during 1889–90 was the completion, at a cost of $35,000, of the laboratories for pathology and bacteriology given by Henry Francis Sears, M.D. The laboratories are spacious, well-lighted, and convenient, but absolutely plain and simple. They were ready for use just when public interest in bacteriology had been greatly stimulated by the bold experiments which German scientists, liberally supplied by their Government with all possible facilities for investigation, have been making in the application of bacteriological discoveries to the practice of medicine. The combination of facilities required for researches like those of Professor Koch seems almost unattainable by any methods as yet developed in the United States. There are needed professorships for research, laboratories, establishments for systematic experimentation on animals, and hospitals for the most careful treatment of human patients; and all these institutions must work together harmoniously for long terms of years, and must be liberally supported without expectation of pecuniary profit, or of immediate tangible results. In the United States these different agencies, which for purposes of fruitful discovery need to act in combination, are maintained, if maintained at all in any one place, by as many different corporations, which are more or less divided in interests, and are quite unaccustomed to act together. Moreover, these different corporations have, as a rule, but scanty resources each for its own immediate object. It must be confessed that the American method of diffused private endowments is, for purposes of medical research, very inferior to the government method as exhibited in Germany, being less prompt, liberal, and patient, and less able to effect the needed combination of resources.

There is no professorship of bacteriology in the Harvard Medical School; the Sears laboratories are not endowed; and the School as a whole can hardly meet its ordinary expenses from year to year. Such resources as the community has placed at its disposal, it uses diligently and with increasing effect.

The Faculty of the Dental School was somewhat changed in 1889–90. Dr. Maurice H. Richardson retired from it, while

Dr. Eugene H. Smith entered it as Instructor in Orthodontia, and Dr. Jere E. Stanton as Instructor in Oral Anatomy and Physiology. At the same time the subject of therapeutics was transferred from Professor Brackett to Assistant Professor Briggs. The teaching staff was also increased by the appointment of four Clinical Lecturers, three additional Instructors, and two additional Assistant Demonstrators.

The Faculty resolved in 1889–90 to establish a three-years' graded course beginning in September, 1891, and they have given public notice to that effect. Except that students will still be admitted to advanced standing on examination, all candidates for the degree will thereafter be required to pass three years in the School. Certificates of study in the office of a private practitioner will no longer be accepted. This action of the Faculty will add materially to the cost of the dental degree, and may temporarily diminish the number of students in the School; but it will raise the standard of the degree and add to its value.

On and after June, 1891, a knowledge of one additional subject will be required at the examination for admission, in accordance with the notice first given in 1889–90. For this reason, perhaps, or because of the increase in the requirements for the degree which takes effect next September, there was this year a sudden increase in the number of the first-year class.

The School had a surplus of $2335.38 in 1889–90, — a surplus a little more than sufficient to extinguish the balance of its debt to the University treasury. Its Subscription Fund now amounts to $8155.85. The very small salaries paid to its teachers were increased a little in 1889–90, and have been again augmented for the current year.

The Bussey Institution lived well within its income during 1889–90, the operations of the year resulting in a surplus of $2473.14. The course of instruction in entomology, which had been temporarily interrupted, was resumed under the charge of Albert H. Tuttle, S.B., M.D. All receipts from the farm, for board of animals and by sale of wood, hay, and sundries, are spent on the farm; and they are sufficient to keep the estate in presentable condition, and to improve some parts of it from year to year. The Horticultural department gives Professor Goodale important aid in the difficult work of providing flowers out of season by the thousand for the large classes in botany at Cambridge. It also makes unusual and interesting exhibits from time to time at the stated exhibitions of the Horticultural Society in Boston.

The income of the Institution from the Bussey Trust (the Institution receives one half the net income of the Trust after payment of certain annuities) was $8873.06 in 1889–90, which was about $1100 more than the income from this source in 1888–89 or in 1887–88. The investments of the Fund in Boston real estate give a much better return than in 1879–80, when the income of the Institution from the Trust was only $3505.30; but they do not promise soon to yield again the income which the Institution enjoyed from them in 1874–75 — namely: $17,155.92. As a lesson in the vicissitudes to which prudent investments in city stores and offices are liable in the course of fifty years, the experience of the Bussey Institution is instructive.

The Veterinary School and Hospital had a prosperous year — the most prosperous of the seven years of their existence. The Hospital, by receiving only paying patients, was able to meet its own expenses and the excess of the expenditures on the School over the receipts from the School. This favorable result was brought about by adding to the Hospital staff a resident surgeon who gave all his time to the Hospital. The salary list was thereby increased; but more and better work was accomplished; so that the Hospital earnings were larger by $2642.33 than the earnings of the preceding year. Professor Lyman, who is at the head both of the School and of the Hospital, is of opinion that an enlargement of the present building would increase the receipts in higher proportion than the expenses. He states clearly (p. 150) the reasons why the School cannot be expected to grow rapidly, and why it needs endowment. He believes that the School and Hospital should have at least two officers who are not in private practice. From the University's point of view it is very desirable that the School should be a place of research as well as of instruction, and that the Hospital should not be obliged to confine itself to paying cases; but to accomplish these improvements a considerable endowment — about $100,000 — would be necessary.

In June, 1890, one more subject was required at the admission examination than had previously been demanded; but the grade of the examination remains somewhat lower than that of the entrance examinations at the Medical and Dental Schools. On the other hand, the range of studies is, and always has been, wider in the Veterinary School than in the Dental.

The Librarian (p. 152) and Assistant Librarian Tillinghast (p. 162) call attention to the increasing charges for periodicals and serials at the Library. The heavy cost of these publications diminishes unduly the means of buying books. Yet teachers and advanced students feel so keenly the need of the freshest publications on their respective subjects, that it is probably inexpedient to reduce the periodical and serial list.

The accessions to the Library in 1889–90 were so numerous, that the cataloguing fell behind, and no progress was made on the back work (p. 159). An addition to the cataloguing staff has therefore been made since the beginning of the current year.

To get all fires out of Gore Hall, the Corporation caused the steam-heating apparatus in that building in 1888 to be connected with the boilers in University Hall. An unexpected result of the change has been that the charges for fuel for the Library have been increased 42 percent, although the past two winters have been mild, and no more heat has been wanted in the Library than was wanted before.

The need of a new reading-room has been explained in previous Reports, and has lately been put before the graduates and other friends of the University in published circulars which were issued by a committee of undergraduates. The undertaking is one quite beyond the resources of the Corporation, and it must therefore await the coming of some single benefactor, or the raising of a large sum by general subscription. That a spacious reading-room, accessible in the evening, should be so urgently desired is a sign of University activity. It means that methods of instruction have improved, and that there is zeal for reading and research. A building slightly detached, north of the present building, but connected with it by covered passages, would best answer the purpose. The whole of Gore Hall could then be converted into a capacious stack, all the books could be properly classified, the delivery-room could be enlarged, and the stacks could be kept cool — to the great advantage of the books — while the reading-room and the work-rooms were kept warm. Excepting the endowment of permanent professorships, this is the most urgent need of the University at this moment.

By the liberality of a few of its friends, the Herbarium was assured last spring of $3500 a year of additional income for five years. Two assistants have already been employed, and every effort will be made to secure for the Curator leisure to carry forward the Synoptical Flora of North America. The Herbarium and the Garden are to share the income of a fund of $2000, which Mr. John L. Russell of Salem, who made the College his residuary legatee, besides making a bequest of $1000 to the Divinity School, desired to have set apart for their benefit (Treasurer's Statement, p. 7). The report of the Curator (p. 165) describes several important accessions to the Herbarium during the year, partly by purchase but mainly by gift. The Herbarium has performed so many services for botanists and botanical institutions in all parts of the world, that it is constantly receiving valuable gifts in return.

The report of the Director of the Botanic Garden (p. 166) gives ample evidence of the usefulness and activity of the establishment, and of the liberality and constancy of its friends. The classes in botany increase with the general growth of the University, and over-tax the resources of the Garden and its greenhouses. The classes open about the tenth of February, and it is a serious task to provide at that season a proper series of flowers in adequate number. The Bussey Institution has been supplying large quantities of flowers for the classes, and can doubtless continue to render this ingenious and interesting service. The proposed Museum of Economic Botany has required much consideration on the part of the Director. Its building is completed, but not yet furnished; many specimens have been already collected; many others will be purchased during the current year; and the general plan and policy of the Museum have been decided upon (p. 169). By the end of the next academic year the arrangement of the collection will probably be sufficiently advanced to make it interesting both to students and to the public. In some respects the exhibition will be unique. The Director is now absent on a journey round the world in the interests of the Museum.

At the Arnold Arboretum no tree-planting was done during the year, for the reason that the Park Commissioners of the City of Boston had been unable to build more roads and to grade the adjoining slopes in season. The slowness with which the road-plan of the Arboretum has been executed by the City has already retarded by several years the execution of the planting-plans, and has caused the loss of many carefully prepared specimens. When it is remembered that after the planting of the permanent collections many years must elapse before the beauty of the specimens can be fully developed, the long delays in the preliminary work seem the more regrettable. The Commissioners have, however, done some work during the past fifteen months; so that the Director hopes (p. 171) to be able to do some permanent planting during the coming season.

The Director and the Assistant in the Arboretum, Mr. Charles E. Faxon, issued during the year the first volume of a magnificent illustrated work, "The Silva of North America," on which they have been engaged for many years.

The Director of the Chemical Laboratory calls attention in his report (p. 172) to the importance of right methods in the teaching of experimental science in schools, outlines the policy to be pursued in arranging the new mineralogical exhibition in the University Museum, and describes the chemical investigations which have been in progress in the laboratories during the year. The valuable collection of minerals and meteorites has all been removed from Boylston Hall, and been stored in the new Museum. In the course of the current year it is expected that the collection will be rearranged in the new rooms, and the mineralogical laboratories be fully furnished and equipped. The Director has procured almost all the money needed for this purpose, as well as the large sum required to build the mineralogical portion of the University Museum.

The number of students who make use of the Jefferson Physical Laboratory increases. The Director reports (p. 181) 218 choices of elective courses in physics during the year 1889–90; and it is to be observed that a reasonable number of students pursued the advanced courses. Two summer courses were given in the long vacation instead of one as heretofore, the new one being more advanced than the other. Of the 31 students who attended these courses 22 were teachers in schools or colleges. The increase in the number of candidates who offer experimental physics at the examination for admission to College is highly gratifying to the professors and assistants in the Jefferson Laboratory; for they have given much time for two years to perfecting laboratory methods for elementary students. The Director describes (p. 183) the investigations which were in progress during the year, and again urges in that connection the need of a good mechanic attached to the Laboratory. An effort was made by Mr. Francis Blake to raise a fund of $100,000 for the endowment of research in the Physical Laboratory; but it was only begun when the wide-spread disturbance of commercial credit in the autumn of 1890 arrested it.

The fire-proof store-house and work-rooms needed by the Observatory have not yet been supplied; so that the library, manuscripts, and photographic plates are still in danger of sudden destruction by fire. The 27,000 plates taken since 1885, many of which are unique, ought to be preserved for comparison with similar plates taken ten or twenty years later. Publication secures the contents of manuscripts, and makes the manuscripts themselves not worth keeping. The value of plates on the contrary is not destroyed by the first publication of the results obtained from them, and they should be preserved for future study. The Director's account of the year's work at the Observatory (p. 186) will be found even more interesting than usual. There is something very suggestive in the wide range and adventurous quality of the operations of the Observatory. They suggest that universities may, in the future, carry on researches in other sciences beside astronomy by detached parties reporting to a home laboratory. Meteorology and geo-physics in general are subjects which could be profitably studied by this method. Governments have heretofore done most of this work; but it now appears that universities can do it also. The publications of the Observatory during the year (p. 193) were numerous and important; and there would have been more of them, had it not been for lack of money to pay for the printing.

The University Museum was completed, ready for its furniture, in 1889–90, as far as the south-western corner-block on Oxford St., and considerable portions of the new structure are already occupied. That portion which is to be occupied by the department of botany has a floor area of 30,000 feet, without counting the halls and stairways, and cost $85,219.55; that portion which is to be devoted to mineralogy has a floor area of 13,200 feet and cost $34,896.23. About 30 percent of the floor area of the botanical and mineralogical sections is given to exhibition-rooms; the rest is devoted to lecture-rooms, laboratories, and storage-rooms. The provision made for instructors and students will be ample for many years to come; and the exhibition-rooms are large enough for the display of type-specimens in proper variety, but not for the display of many specimens of the same type.

The work of the Museum of Comparative Zoölogy is crippled for lack of money. Explorations cannot be carried on; much-needed assistance cannot be hired; cases cannot be built; and the stores of the Museum cannot be opened to specialists; because the funds do not yield income enough to cover any extraordinary expenses. Moreover a part of the income is pledged for several years to come to the repayment of advances made for building. Merely to complete its exhibition collections, as planned, the Museum ought to have an additional income of $10,000 a year for five years.

The period of isolation which the Peabody Museum of American Archaeology and Ethnology has had to endure—like most endowments which bear the name of an individual — may fairly be said to be over. Persons interested in the subject are no longer restrained from adding to the very limited resources of the Museum by the impression that it is sufficiently endowed, or that it is primarily a monument to its founder. The year 1889–90 was one of much activity at the Museum, because several friends provided means of productive exploration, or themselves conducted successful explorations in the interest of the Museum. In October last the first addition ever made to the permanent funds of the Museum was received — the generous gift by Mrs. Mary Copley Thaw of Pittsburgh of $30,000 to found the Thaw Fellowship Fund (p. 209). Since that date two fellowships have been provided for the benefit of students of archaeology at the Museum, and American Archaeology and Ethnology have been recognized by the Faculty of Arts and Sciences as subjects in the pursuit of which the higher degrees in arts may be obtained. The Committee appointed by the Overseers to visit the Museum is composed of active supporters of archaeological exploration and research, who work in full accord with the Trustees of the Museum on the one hand and the University authorities on the other. It is obvious from these facts that broader prospects are opening for this interesting department of the University.

An important step was taken in 1889–90 towards the formation of a valuable museum in connection with the department of Semitic Languages and History. In December, 1889, Mr. Jacob H. Schiff of New York, a member of the Overseers' Committee to visit that department, offered the University $10,000 for the purchase of casts, manuscripts, and other objects illustrating Semitic literature and history, on condition that the University provide for the exhibition and care of the collection. This condition was immediately met through the coöperation of the Trustees of the Peabody Museum, who at the suggestion of their Curator offered a gallery 61 feet square in the new part of their building, as a place of temporary deposit for the new collection. Purchases of manuscripts and antiquities began in March, and gifts began to come in. It soon appearing that for systematic and prompt purchasing it was desirable to have for a time a responsible buyer in Europe, Professor Lyon was commissioned to go abroad for that purpose. He spent nearly three months in London, Paris, and Berlin, and succeeded in obtaining from numerous sources a valuable collection of books, manuscripts, inscriptions, photographs, casts, coins, electrotypes, impressions of seals and tablets, and other objects to the value of about $5000. Reproductions, even of very precious objects, being as a rule inexpensive, after the moulds have once been made, a moderate sum of money has secured a highly instructive and interesting collection.

Under an agreement between the Corporation and the Trustees of the Museum the cases for the collection are in process of construction, and it is expected that by next April most of the objects already purchased or given will be on exhibition.

Many of the most valuable Semitic objects now in the great museums of Europe have never been moulded for reproduction, and the museum authorities are less disposed than formerly to run the risks involved in moulding. Nevertheless permission could probably have been obtained to reproduce many desirable objects both at Paris and Berlin; but Professor Lyon was deterred from entering upon that undertaking last summer by the high cost of the first moulds, and by the lack of exhibition space for the larger objects.

Although this new collection is necessarily arranged for the time being in a provisional, although perfectly safe, manner, it is clear that an important addition has already been made to the archaeological and historical resources of the University, and that around this nucleus very precious materials to illustrate the history and literature of the most remarkable of races will in time be gathered.

The attendance at the summer courses offered by the University during the long vacation continues to increase, and it seems probable that they meet a permanent demand. The students at these courses are almost uniformly very much in earnest, and inclined to work too much rather than too little. The instructors are generally found among the younger officers of the University, who can usually prepare themselves for the strain of teaching with vivacity every day during from four to six weeks of summer weather, by taking some vacation in June during the period of final examinations. As the classes contain a large proportion of professional teachers, they are very interesting and stimulating to the instructors. For the benefit of the students in these courses — many of whom are persons of small means — the Foxcroft Club was kept open last summer with good results.

The Quinquennial Catalogue was printed in English in 1890 for the first time, except that the abbreviations for all but the engineering degrees were kept in the Latin form, and that the names of learned societies on the Continent of Europe were not translated. A statement by the editor concerning the other changes made in this edition will be found in the Appendix (p. 238).

For several years past there has been a movement among graduates of the professional schools who are not also graduates of the College in favor of an amendment to the Act of 1865 which should extend the right of suffrage for the Board of Overseers to graduates of all departments. The agitation began four years ago in the Association of the Graduates of the Scientific School, but has now extended to all the other Schools. In 1889–90 petitions were sent to the President and Fellows by the Faculty and certain Alumni of the Divinity School, by the Law Faculty and the Law School Association, by officers and members of the Scientific School Association, by graduates of the Medical School, and by the Dental Alumni Association. These petitions were transmitted by the President and Fellows to the Overseers, and were by them referred to a committee, who gave a hearing to persons interested in advocating the change proposed. The final action of the Overseers on the petitions was adverse. During the current year similar petitions have again been presented, supported in some instances by graduates of the College.

Last June the President and Fellows offered the use of all their grounds in Cambridge to the City for twelve weeks, beginning on the Monday after Commencement, in every year till further notice, provided that the grounds should be restored to the University in the same condition in which they were received. The City accepted the loan of the grounds, but made little use of any part of them except Holmes Field, where evening concerts were given. It was the hope of the President and Fellows that the people of Cambridge, and particularly the children, might enjoy the grounds in summer, and they still cherish this hope, although it would doubtless be necessary for the City to incur some expense for seats and police.

The increase in the amount of tuition-fees and the rents of Walter Hastings Hall — which was finished in December, 1889, at a total cost of $243,215.95 — emboldened the Corporation to raise the salaries of fifteen professors and the Librarian from $4000 to $4500 a year, and the salaries of four Law professors from $4500 to $5000 a year. At the same time they passed a standing vote which fixed the salary of an assistant professor in his second term at $3000 a year instead of $2500. For College professors this is the first increase in the regular salary since 1869. Some improvement was made simultaneously in the rates of compensation to instructors.

In January, 1890, an unknown benefactor paid $200,000 into the Retiring Allowance Fund, doing thereby a good deed of far-reaching influence. On the 31st of July, 1890, the Fund amounted to $242,211.97. Although not large enough to warrant the Corporation in establishing forthwith the system of retiring allowances which they put on record in 1880 as in their judgment a suitable system, it would enable them to provide for single cases of disability, should such occur.

The President and Fellows desire to manage the property of the University in a conservative way, although they mean to spend its whole income for the benefit of the present generation of youth. The Overseers will observe that the year 1889-90 was a favorable one financially considered. There were surpluses in all departments except the Divinity School, Medical School, and Observatory; and in these the deficits were insignificant. Proper payments were made towards the sinking of premiums and the repayment of advances for buying needed lands in Cambridge. The Stock Account, an unrestricted fund, was nursed, and the book valuation of unimproved lands in

Cambridge reduced by $30,037.91. These and similar measures the Corporation habitually take, in the hope of keeping the University property good, and of providing in the fat years some resources for the lean. The permanent obligations of the Corporation for salaries are large; but they are careful to make a fair proportion of their appointments only for one year.

The attention of the Overseers is respectfully invited to the following reports on the several departments and scientific establishments.

CHARLES W. ELIOT,
President.

CAMBRIDGE, 10 January, 1890.

REPORTS OF DEPARTMENTS.

THE FACULTY OF ARTS AND SCIENCES.

To the President of the University:

Sir, — As Dean of the Faculty of Arts and Sciences, I have the honor to present the following report upon the organization and subsequent action of that body at the close of the academic year 1889–90: —

The amended Statutes, establishing this Faculty and giving it the charge of Harvard College, the Lawrence Scientific School, and the Graduate School, having been adopted by the Corporation, were approved by the Board of Overseers, May 21, 1890, and took effect immediately. The Faculties of Harvard College and of the Lawrence Scientific School were thereby dissolved, and their rights, duties, and administrative powers were transferred to the new Faculty of Arts and Sciences; the powers of recommending candidates for the degrees of Master of Arts, Doctor of Science, and Doctor of Philosophy, heretofore exercised by the Academic Council, the administrative authority and duties of the same body under the Standing Rules of the Corporation and Overseers, and the charge of the fellowships and scholarships appropriated for the use of graduate students, also passed to the new Faculty, the Academic Council being succeeded in its deliberative functions by the University Council.

The Faculty of Arts and Sciences, under this reorganization, met for the first time May 27, 1890. As only four weeks of the academic year then remained, they found it expedient to make some provisional arrangements for completing the business of the year, postponing for a time some details of their permanent organization. It was accordingly voted that the administrative work heretofore delegated to the Deans of the Faculties of Harvard College and of the Lawrence Scientific School, and to the Secretary of the Academic Council, respectively, should be conducted by Professors Smith and Chaplin, and, in the absence of Professor Peirce, by the Secretary of the University. The Standing Committees of the Faculty of Harvard College and of the Academic Council were requested to act until further notice. The regulations and standing orders of the Faculty of Harvard College were then adopted, and also such rules and standing orders of the Academic Council as related to the degrees for which that body had the power of recommendation and to such other matters as had been transferred from the charge of the Council to that of the new Faculty — the adoption in both cases being provisional and having in view the possible future revision of the rules and orders and their closer adaptation to the altered distribution of powers.

With these arrangements the Faculty acted finally upon the announcement of the courses of instruction for the year 1890–91, already well advanced when the reorganization took place and fully described in the report now presented by the Dean of Harvard College. The recommendations for fellowships for the year 1890–91 were also completed, and in order to provide for dealing with possible changes or vacancies the Committee of the Academic Council having this subject in charge was authorized to continue to act during the summer.

In preparation for the work of the new academic year the Faculty then established eleven standing committees, to take the place of committees of the former Faculties and Council, heretofore dealing with the same subject-matter. Then they proceeded, in conformity with the amended Statutes, to delegate to the administrative boards of Harvard College, the Lawrence Scientific School, and the Graduate School, respectively, the enforcement of the regulations relating to those departments and the conduct of ordinary matters of administration and discipline, leaving for future consideration the precise line to be drawn, between subjects on which the Faculty will delegate the power of final action and those over which it will retain, either the power of revision, or the complete jurisdiction. The determination of this line will plainly demand some careful inquiry and perhaps the light of some experience. It is a most important feature of the new organization that it gives the details of administration into the efficient hands of the smaller boards and economizes the strength of the larger body by proposing to reserve it for questions of general policy. Broadly speaking, rules are to be established or approved by the Faculty and applied by the administrative boards. But cases may easily arise in which the interpretation of a rule is as important as the establishment of the rule itself, and in which the Faculty may find it desirable to act directly and not by a delegated authority. It is, moreover, to be learned by time and observation how far the Faculty can wisely exclude from their discussions the special cases in which the life of the University and the needs of its students are most vividly presented. In short, in this reorganization of the administrative bodies the precise point at which there is the greatest economy of force and the least loss of insight and interest is probably to be ascertained by careful experiment.

At the close of the academic year the new Faculty of Arts and Sciences passed the requisite votes, recommending for the degrees of A.B., S.B., A.M., and Ph.D. the candidates who appeared by the record to be qualified therefor. As the vote of recommendation, however, was only the concluding step in work which had been carried nearly to its completion by the lately-existing Faculties or by the Academic Council, it is deemed advisable that this subject should be reported upon as heretofore and in its natural connection with the work of the year 1889–90, by the Deans of Harvard College and of the Lawrence Scientific School and by the Secretary of the Academic Council; and to their reports reference is accordingly made for statements as to the number of candidates recommended and the honors and other distinctions awarded for special merit.

CHARLES F. DUNBAR, *Dean*.

THE COLLEGE.

To the President of the University:

Sir, — I have the honor to submit the following report on the administration of the College for the academic year 1889–90. In accordance with the practice of previous years, the report will include the more important transactions of the College Faculty, although a small portion of the business to be reported upon was left unfinished by that body and put into final shape by its successor, the Faculty of Arts and Sciences.

The whole number of students in attendance at the beginning of the year was twelve hundred and seventy-two, distributed as follows: —

Seniors	279
Juniors	244
Sophomores	282
Freshmen	324
Whole number of undergraduates	1129
Special Students	143
Total	1272

One Senior died early in the year; one other was obliged by illness to discontinue his studies; a third withdrew in March and has joined the present Senior class. Four failed to pass in the requisite number of courses. On the other hand, one member of the class absent on leave, and two former members who were registered in the Medical

School, but in their three years' residence as undergraduates had anticipated a considerable portion of the work of the Senior year, completed the requirements for the degree. Accordingly two hundred and seventy-five actual or former members of the class, together with eight Juniors who had fulfilled all the requirements for graduation, and five members of previous classes, who had made up the deficiencies which had prevented them from graduating in regular course, were admitted to the degree on Commencement day. The degree was also conferred, on the recommendation of the Faculty, on three students of one or more years' standing in the Graduate Department.

The number of students who have graduated in each of the last seven classes, and the number in each class who have failed to graduate owing to deficiencies of scholarship, are given in the following table: —

	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Graduated	192	181	221	225	221	204	275
Failed	2	3	4	7	7	4	4

The aggregate losses and gains of the other three classes of last year, from October, 1889, to October, 1890, are shown in the following table: —

	October, 1889.		Loss.	Gain.	October, 1890.	
Class of 1891 . .	(Juniors)	244	24	69	(Seniors)	289
Class of 1892 . .	(Sophomores)	282	60	32	(Juniors)	254
Class of 1893 . .	(Freshmen)	324	74	40	(Sophomores)	290

These losses and gains of the several classes are of course not altogether losses or gains to the College, a considerable portion of them being due to the transfer of students from one class to another, as will appear from the next table, which gives the nature of the losses and gains in detail.

Among the thirty-nine students who left College without completing the work of the year are included seven whose incomplete record was due to their failure to pass the examinations. Three of these have entered the Law School. Of the remaining thirty-two, eleven were obliged by ill health to discontinue their studies. The probation of one Freshman was closed for persistent neglect of his studies, and one other Freshman and two Sophomores were advised to withdraw for the same reason. One Sophomore was dismissed for presenting themes which were not of his own composition. Two withdrew owing to lack of money, and two others to go into business. Twelve withdrew for various other reasons of a personal nature. Of these one has returned to College this year in a lower class, and one has entered the Law School.

	Class of 1891.	Class of 1892.	Class of 1893.	Total for three Classes.
LOSSES.				
Left College without completing the year	7	13	19	39
Left College after completing the year	8	9	5	22
Removed to a lower class	1	10	39	50
Advanced to a higher class	8	28	11	47
Total loss	24	60	74	158
GAINS.				
From higher classes	..	1	10	..
From lower classes	29	10	..	..
Newly admitted	40	21	30	91
Total gain	69	32	40	141
Net loss	..	28	34	17
" gain	45	..	..	..

Personal or family reasons led to the withdrawal of seven of the twenty-two students who completed the work of the year, but have not returned to College. Three were prevented from returning by poor health, and one died in the summer vacation. Two alleged lack of means as their reason for withdrawing. One was removed by his father temporarily to another college. One left College to go into business, and seven to begin professional study. Of these seven, four were Juniors who had anticipated the greater part of the Senior year's work and have leave to complete the requirements for the degree during the present year while pursuing their professional studies, — three of them in the Law School and one in the Medical School. The other three abandoned their College course, two at the end of the Sophomore and one at the end of the Freshman year.

The fifty students removed to lower classes, together with the seven mentioned above, who would have been placed in lower classes had they returned to College, constitute the aggregate loss of the three classes due to failure in scholarship. To these are added in the following table, which gives also the corresponding figures for previous years, the four (also mentioned above) who were dismissed or withdrawn from College for persistent neglect of their studies: —

	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Removed to lower classes .	7	23	33	33	61	46	47	57
Withdrawn during the year	5	2	12	3	4	. .	10	4
Total	12	25	45	36	65	46	57	61
Whole number of students in the three classes . .	682	695	745	726	745	760	825	850

Of the forty-seven students advanced to higher classes, four were Juniors who had for special reasons been permitted by the Faculty to qualify themselves for the degree at the end of the Junior year. Eleven Sophomores and two Freshmen, who had been granted a similar privilege, have been advanced, in virtue of the work they have accomplished, to the Senior and Junior classes respectively, the Faculty having adopted the rule that in such cases the student shall be classed according to the number of courses that stand to his credit. The remaining thirty were former members of the classes to which they were advanced, having so far made good their deficiencies as to be entitled to this promotion under the rules. Four of them were Juniors who thus succeeded in graduating with their former class.

The ninety-one persons newly admitted to the three classes under consideration include thirteen students who had previously been members of the College, and resumed their connection after an interval of absence. One of these was readmitted in the course of the past year. Two candidates were admitted to the Sophomore class and one to the Senior class on passing the usual examinations. Fourteen Special Students were admitted, — two to the Senior, five to the Junior, and seven to the Sophomore class, — having given satisfactory proof of their qualifications chiefly by work done in College. Three other Special Students were admitted, — two to the Junior, and one to the Sophomore class, — partly on the basis of work previously done at other colleges. Three students from other departments of the University, and fifty-five graduates or students of other colleges or scientific schools, were admitted directly, — thirty-six to the Senior, twelve to the Junior, and ten to the Sophomore class.

The most interesting feature of these statistics is the marked increase in the number of students admitted, directly or indirectly, on the basis of work done in other colleges or institutions of college grade, the whole number, sixty-six, being sixty percent larger than that of the preceding year. The examination of this class of applications had as long ago as 1883 assumed such importance that the Faculty entrusted it to a standing committee with the Dean as chairman. In 1887 the chairmanship was transferred to Professor Macvane, who held it until the present year, when, in the organization of the Faculty of Arts and Sciences, it naturally devolved upon the Dean of the Graduate School, the admissions to which from other colleges present precisely the same questions as those to the undergraduate classes. No committee of the Faculty has performed a more laborious or a more useful service. It has admitted two hundred and fifty-two candidates who have actually entered College. The number of applications it has considered is perhaps fifty percent larger, since many were rejected and many applicants who were admitted did not come. In its eight years' experience it has accumulated a mass of precedents relating to about ninety colleges or similar institutions. The students admitted have, with very few exceptions, made creditable records here, and some have attained the highest distinction; the policy of this method of admission has been abundantly justified by its fruits. The sudden increase of the number admitted this year may be due to exceptional causes, but there is promise of steady growth in the record of eight years, given in the following table: —

Year of Admission.	Admitted Senior.	Admitted Junior.	Admitted Sophomore.	Admitted Freshman.	Admitted directly.	Admitted after one year or more as Special Student.	Total for all classes.
1883	6	4	1	. .	9	2	11
1884	13	6	7	. .	22	4	26
1885	8	7	5	. .	19	1	20
1886	9	6	9	. .	21	3	24
1887	12	8	8	. .	24	4	28
1888	14	11	6	5	32	4	36
1889	18	9	10	4	36	5	41
1890	34	13	11	8	63	3	66
Total for eight years . .	114	64	57	17	226	26	252

The new Freshman class numbers three hundred and sixty-seven, made up as follows: —

Admitted in 1890	
by examination	302
from other colleges	8
from the Lawrence Scientific School	1
from Special Student	1
Previously admitted	16
Removed from a higher class	39
Total	367

The number of Special Students in attendance at the beginning of the year, and the changes in their number down to October, 1890, are given in the following table: —

In attendance October, 1889		143
Registered later in the year		2
		145
Withdrew without completing any study		21
Completed one or more studies		124
Left College before the end of the year	8	
Left College at the end of the year	36	
Admitted to a College class	18	
		62
Returned as Special Students, September, 1890		62
Newly admitted, September and October, 1890		79
Present number		141

Decrease, 2.

Combining and comparing the statistics which have been given, we obtain the following results: —

Number of students in attendance, October, 1890: —	
Seniors	289
Juniors	254
Sophomores	290
Freshmen	367
Whole number of undergraduates	1200
Special Students	141
Total	1341
Whole number of undergraduates, October, 1889	1129
" " " " 1890	1200
Increase	71
Whole number of students, October, 1889	1272
" " " " 1890	1341
Increase	69

The examinations for admission were this year held at Southborough and Worcester, Mass., and at Minneapolis, Minnesota, in addition to the twelve places where they have heretofore been held in the United States, and at London and Bonn in Europe. The Faculty is now prepared to hold these examinations at any city or school not within easy access of a place where they are already established, on reasonable notice, coupled with the assurance that at least ten candidates (preliminary or final) will present themselves; and a general announcement to this effect will appear in this year's Catalogue. In accordance with the vote of the Faculty noticed in my last report, the autumn examinations began one week before the first day of the academic year, and the candidates were informed of the results in time to give those who were admitted a whole day in which to consult with their advisers and complete other necessary preparations for registering and beginning their regular work at the appointed time. To guard against evasion of the rule requiring of preliminary candidates certificates of preparation from their teachers, the Faculty amended the rule by adding the provision that "when a candidate has been in regular attendance at a school or academy during the year preceding his preliminary examination, his certificate of preparation must be signed by the principal of that school or academy."

The whole number of candidates who offered themselves to be finally examined for admission this year was three hundred and ninety-one, or thirty-six more than in 1889. Of these, seventeen, who took a part of the examination in June with the intention of completing it in September, were so unsuccessful that they abandoned the attempt to pass this year; leaving the number of candidates who completed the examination three hundred and seventy-four. The use made by these of the privilege of dividing the examination was as follows: —

Number of candidates who	
Divided the examination between two years	257
" " " " June and September .	57
Took the whole examination at one time	60
Total	374

The statistics of the examinations which I now submit relate, in the first place, exclusively to these three hundred and seventy-four candidates, without regard to the time when they were examined, and are designed to show the character of their preparation for college, — the studies they pursued in their preparatory course, and the quality of their work as tested by the examinations. Side by side with these statistics I have placed, for the purposes of comparison, the corresponding figures for 1888 and 1889, the only years in which the examinations have been conducted by the present method exclusively.

It will be remembered that of two of the elementary studies, German and French, the candidate may omit one, provided he present in place of it one advanced study in addition to the two required of all candidates; and also that he may omit elementary Greek or elementary Latin, provided he substitute for it two advanced courses (or their equivalent), one of which, however, must be in mathematics and the other in either mathematics or physical science. With the exception of this restriction on those who omit Greek or Latin, the candidate's choice of advanced studies is entirely free. The number of courses he must choose is: —

(*a*)	If he presents all the elementary studies, ...	2	courses.
(*b*)	" omits German or French, ...	3	"
(*c*)	" " Greek or Latin, ...	4	"
(*d*)	" " German or French and Greek or Latin,	5	"

The extent to which each of these four plans of preparation for College has been used by the candidates of 1888, 1889, and 1890 respectively, is shown in the following table: —

	1888.			1889.			1890.		
No. of candidates who presented themselves on —			Per cent.			Per cent.			Per cent.
Plan *a*		99	31.43		122	37.31		137	36.63
Plan *b*, omitting German .	166			150			170		
" " " French .	35			31			32		
" " " both . .	2			. .			4		
Total, plan *b* .		203	64.44		181	55.35		206	55.08
Plan *c*, " Greek . . .	11			21			28		
" " " Latin . . .	0			0			0		
Total, plan *c* .		11	3.50		21	6.42		28	7.49
Plan *d*, " Greek & Germ.	2			2			2		
" " " " " French	0			1			1		
" " " Latin " Germ.	0			0			0		
" " " " " French	0			0			0		
Total, plan *d* .		2	0.63		3	0.92		3	.80
Whole no. of candidates .		315			327			374	

The following positive statistics, deduced from the above table, may be of interest: —

Number of candidates presenting—	1888.		1889.		1890.	
		Per cent.		Per cent.		Per cent.
Elem. Greek	302	95.87	303	92.66	343	91.71
" Latin	315	100.	327	100.	374	100.
" Greek and Latin . .	302	95.87	303	92.66	343	91.71
" Greek without Latin	0		0		0	
" Latin without Greek	13	4.13	24	7.34	31	8.29
" German	145	46.03	175	53.52	198	52.94
" French	278	88.25	295	90.21	337	90.11
" German and French .	110	34.92	143	43.73	165	44.12
" Germ. without French	35	11.11	32	9.79	33	8.82
" French without Germ.	168	53.33	152	46.48	172	45.99

From this table it appears that the falling off in the proportion of candidates presenting elementary Greek and the increase in the proportion of those presenting German and French, which took place in 1888 and 1889, have progressed no further, the figures for 1889 and 1890 differing in no case as much as one per cent. The provision of a substitute for elementary Greek or Latin has had no effect whatever on the latter; the whole effect has been felt in Greek, which was omitted this year by about eight and a quarter percent of the candidates. This small percentage has been more than offset by the increase in the whole number of candidates, so that the absolute number of those presenting Greek has, since 1888, materially increased. This number for each of the last seven years is given in the following table. Down to 1886 Greek was prescribed for all candidates.

	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Number of candidates examined in elementary Greek	307	319	308	318	302	303	343

It will be remembered further that in two of the elementary studies the candidate has a choice of subjects: in History, between Greek and Roman history on the one hand, and the history of the United States and of England on the other; and in Physical Science, between a course in descriptive physics and astronomy and one in experimental physics. In these two studies the candidates under consideration the corresponding candidates in 1888 and 1889, presented selves for examination as follows : —

	1888.		1889.		1890.	
lents examined —		Per cent.		Per cent.		Per cent.
e history of Greece and of Rome	281	89	285	87	314	84
" " the United States and of England . . .	31	10	42	13	61	16
ither alternative	3		2		1	
			329		376	
th alternatives	.		2		2	
	315		327		374	
scriptive physics and astronomy	212	67	164	50	158	42
perimental physics	93	30	149	46	199	53
ither alternative	10		15		17	
			328		374	
th alternatives	.		1			
	315		327			

ere is shown here a slow gain of the modern over the ancient ry, but more than five sixths of the candidates still continue to nt the latter. On the other hand the experimental physics has nced rapidly at the expense of the descriptive, and was this year ed by more than half the candidates.

show the extent to which the several *advanced* studies entered the preparation of these candidates, I give first the number and ercentage of candidates presenting themselves in each study : —

	1888.		1889.		1890.	
le number of candi-ates	315	Per cent.	327	Per cent.	374	Per cent.
ffering Greek	256	81	243	74	262	70
" Latin	301	96	305	93	334	89
" Greek Comp. .	198	63	188	57	190	51
" Latin " .	223	71	200	61	217	58
" German . . .	43	14	43	13	49	13
" French	61	19	84	26	88	24
" Logarithms and Trigonometry	48	15	54	17	75	20
" Solid Geometry	53	17	61	19	91	24
" Anal. Geometry	12	4	15	5	16	4
" Mechanics or Adv. Algebra	11	4	10	3	22	6
" Physics . . .	9	3	1	0.3	9	2
" Chemistry . .	22	7	27	8	41	11

Here again it is noticeable that in spite of the decrease in the proportion of candidates presenting the *advanced* classical studies, the absolute number has increased in both Greek and Latin. Even in Greek and Latin composition the falling off has not been as great as was to have been expected. Still, in all four subjects there has been a steady decrease in the relative number. Of the other departments, German and physics have made no appreciable gain in the last two years. French gained somewhat in 1889, but has made no advance this year. Chemistry has gained steadily, but claims as yet little more than one tenth of the candidates. The most striking gain is in mathematics, where it appears that in trigonometry and solid geometry both the relative and the absolute numbers have increased, while the other two subjects have at least held their own. The requirement that half of the substitute for elementary Greek must be in mathematics of course accounts for part of this increase, but that it does not account for the larger part is shown by two facts: first, that the increase in trigonometry, which must be offered by *all* candidates who omit Greek, is not as great as in solid geometry, in place of which such a candidate may offer analytic geometry; and, secondly, that while the increase in the proportion of candidates omitting Greek from 1889 to 1890 is less than one percent, the increase in the proportion of those offering trigonometry is three percent.

To show the effect which the greater liberty of choice allowed by our present system has had on the study of the classics and mathematics beyond the elementary requirements among our own candidates for admission, I have prepared the two following tables, in the first of which are given the actual numbers of candidates who have been examined in the advanced studies of these departments during the past seven years. In mathematics the statistics are confined to trigonometry and solid geometry, as these were the only advanced mathematical subjects on which candidates were examined before 1887.

	Old Method.			Old and New.	New Method.		
	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Whole number of candidates	307	319	308	327	315	327	374
Number examined in —							
Advanced Greek	247	265	256	246	256	243	262
Greek Composition	247	265	256	223	198	188	190
Advanced Latin	293	306	301	309	301	305	334
Latin Composition	293	306	301	266	223	200	217
Logarithms and Trigonometry	59	55	55	73	48	54	75
Solid Geometry	59	55	55	76	53	61	91

The other table gives the proportion of these numbers to the whole number of candidates.

	Old Method.			Old and New.	New Method.		
	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Percentage of candidates examined in —							
Advanced Greek	80	83	83	75	81	74	70
Greek Composition	80	83	83	68	63	57	51
Advanced Latin	95	96	98	94	96	93	89
Latin Composition	95	96	98	81	71	61	58
Logarithms and Trigonometry	19	17	18	22	15	17	20
Solid Geometry	19	17	18	23	17	19	24

The tables on pp. 52, 53 are designed to show the various ways in which the advanced studies have been combined in the preparation of three hundred and sixty of these candidates, — fourteen, whose list of advanced studies was incomplete, having been omitted from the account. The figures which are repeated in each line of the table indicate the number of candidates who presented in combination the studies under which the figures are placed. Thus, under Plan *a*, forty-six candidates presented Greek and Latin, one presented Greek with Greek and Latin composition, one presented Greek and French, etc. Full courses are distinguished by capital letters and figures in bold-face type.

For lack of space the single candidate on Plan *d* who presented the full number of advanced studies is not included in the table. His advanced studies were Latin, French, chemistry, and the four mathematical subjects.

The following figures, deduced from these tables. show to what extent the candidates examined for admission in 1888, 1889, and 1890 had carried their studies beyond the requirements: —

Candidates who presented advanced studies exceeding the	1888.	1889.	1890
required amount by one half-course	14	9	16
" one course	39	45	49
" one and a half courses	7	5	3
" two courses	14	9	8
" two and a half courses	..	4	..
" three courses	2	2	2
" three and a half courses	1	..	..
" four courses	3	1	..
Total	80	75	78
Percentage	25.4	22.9	20.9

Plan *a*. 136 Candidates.	GREEK.	LATIN.	Greek Composition.	Latin Composition.	GERMAN.	FRENCH.	Trigonometry.	Solid Geometry.	Analytic Geometry.	Mechan. or Adv. Alg.	PHYSICS.	CHEMISTRY.
2 Courses.	46	46										
	1		1	1								
	1					1						
		2	2	2								
		2		2				2				
		3			3							
		11				11						
		10					10	10				
		1					1		1			
		1										1
			1			1		1				
					6	6						
					1		1	1				
						2	2	2				
						1						1
							1	1				1
2½ Courses.	1	1		1								
		1	1	1				1				
		1		1	1							
		1		1		1						
						2		2			2	
3 Courses.	10	10	10	10								
	1	1		1				1				
	1	1			1							
	4	4				4						
	1	1					1	1				
	1						1	1				1
		1	1	1	1							
		1	1	1		1						
		1	1	1			1	1				
		4			4	4						
		2				2						2
		1					1	1	1	1		
3½ Courses.	1	1	1	1			1					
	1	1		1			1	1				
4 Courses.	2	2			2	2						
	1	1		1		1		1				
	1	1				1	1	1				
	1	1					1	1			1	
		2	2	2	2	2						
		1				1	1	1				1
5 Courses.	1	1	1	1	1	1						
	1	1	1	1	1							1
Number of Candidates in each study	76	119	23	30	23	44	24	30	2	1	3	8

PLAN *b*. 7 Candidates.	GREEK.	LATIN.	Greek Composition.	Latin Composition.	GERMAN.	FRENCH.	Trigonometry.	Solid Geometry.	Analytic Geometry.	Mech'cs or Adv. Alg.	PHYSICS.	CHEMISTRY.
3 Courses.	138	138	138	138								
	1	1	1					1				
	3	3		3				3				
	2	2			2							
	7	7				7						
	4	4					4	4				
	1		1	1			1	1				
	1		1	1								1
	1						1	1				1
		1	1	1	1							
		2	2	2		2						
		1		1	1		1					
		3		3		3		3				
		1		1			1	1		1		
		1			1							1
		1				1	1	1				
		1					1	1				1
						1	1	1	1	1		
							1	1	1	1		1
3½ Courses.	2	2	2	2				2				
	3	3		3		3						
	1	1		1								1
		1		1			1	1	1	1		
4 Courses.	2	2	2	2	2							
	6	6	6	6		6						
	3	3	3	3			3	3				
	2	2	2	2				2		2		
	4	4	4	4								4
	2	2				2	2	2				
ber of Candidates n each study	183	192	163	175	7	25	18	28	3	6	0	10
PLAN *c*.- 6 Candidates.												
4 Courses.		1		1			1	1		1		1
		1			1		1	1	1	1		
		4			4		4	4			4	
		1				1	1	1	1	1		
		1				1	1	1				1
		1				1	1		1			1
					8	8	8	8				8
					1		1	1	1	1		1
						1	1	1	1	1		1
							1	1	1	1	1	1
4½ Courses.		2		2		2	2	2				2
		1			1		1	1		1		1
5 Courses.		1			1	1	1	1	1	1		
					1	1	1	1	1	1		1
5½ Courses.		1		1	1	1	1	1	1	1		
ber of Candidates n each study		14		4	18	17	26	25	9	10	5	18

The success with which this body of candidates sustained the test of the examinations is shown by the next two tables, of which the first gives the percentage of failure in each subject for the last three years: —

Percentage of candidates failing in each study: —	1888.	1889.	1890.
ELEMENTARY STUDIES.			
English	15	17	12
Greek	3	6	9
Latin	3	5	3
German	10	11	12
French	14	12	11
History (Greek and Roman)	5	7	6
" (American and English)	3	13	18
Algebra	22	28	11½
Plane Geometry	21	13	17
Physical Science (Descriptive)	16	15	23
Physics (Experimental)	15	14	14
ADVANCED STUDIES.			
Greek	19	20	10
Latin	9	17	27
Greek Composition	16	12	17
Latin "	26	17	23
German	21	17	18
French	23	23	24
Logarithms and Trigonometry	71	32	40
Solid Geometry	19	23	31
Analytic Geometry	83	33	37½
Mechanics and Advanced Algebra	73	64	45½
Physics	22	100	11
Chemistry	5	0	0

The second table gives the general result of the examination, compared with those of previous years.

	1887.			1888.	1889.	1890.
	Old Method.	New Method.	Total.			
Candidates examined	247	80	327	315	327	374
" admitted	235	66	301	301	305	348
" " clear	89	21	110	125	114	145
" rejected	12	14	26	14	22	26
Per cent "	4.9	17.5	8.	4.4	7.	7.

Of the three hundred and forty-eight candidates admitted this year, three hundred and two entered the Freshman class in September. One, by passing further examinations, was admitted to the Junior class. Of the remaining forty-five, twenty-six, on account of their youth, or poor health, or lack of money, have decided not to enter College this year, fifteen of them giving notice that they intend to enter next year; four have gone to other institutions; four will not go to college at all; one is undecided; three have gone abroad. The remaining seven have not been heard from.

Besides the three hundred and seventy-four candidates for admission, whose record is exhibited in the preceding statistics, three hundred and seventy-six persons, or twenty-four more than last year, were examined in various subjects as candidates for a preliminary certificate. Both cf these classes of candidates are represented in the following tables, which give for each study the proportion of candidates examined, and the proportion of failure among those examined,

Whole number of candidates: 1888, Preliminary . . . . 353 1889, " . . . . 352 1890, " . . . . 376 1888, Final . . . . 315 1889, " . . . . 327 1890, " 374	Percentage of the whole number of candidates who were examined in each study.					
	1888.		1889.		1890.	
	Prelim.	Final.	Prelim.	Final.	Prelim.	Final.
ELEMENTARY STUDIES.						
English	6	72	0.3	98	. .	99
Greek	80	40	78	39	81	43
Latin	96	36	95	37	96	39
German	25	36	29	37	33	33
French	72	43	68	48	73	45
History (Greek and Roman)	75	38	76	34	72	39
" (American and English)	11	6	11	8	10	10
Algebra	88	51	86	57	86	58
Plane Geometry	51	79	51	79	52	69
Physical Science (Descriptive)	27	53	15	35	14	34
" " (Experimental)	14	20	29	35	28	33
ADVANCED STUDIES.						
Greek	5	79	6	73	3	67
Latin	16	90	15	83	11	84
Greek Composition	19	52	16	46	18	39
Latin Composition	11	64	12.5	59	15	52
German	3	12	5	11	4	9
French	7	16	9	22	6	18
Logarithms and Trigonometry	1	15	4	17	3	19
Solid Geometry	3	15	7	17	5	22
Analytic Geometry	0.3	3	0.3	4	. .	4
Mechanics or Advanced Algebra	0	3	1	3	0.3	5
Physics	0	3	. .	0.3	0.3	2
Chemistry	3	7	3	6	2	8

in that study this year. With these are placed the corresponding statistics for the examinations of 1888 and 1889.

	Percentage of failure among those examined in each study.					
	1888.		1889.		1890.	
	Prelim.	Final.	Prelim.	Final.	Prelim.	Final.
ELEMENTARY STUDIES.						
English	50	20	0	17	. .	12
Greek	24	7	28	14	22	15
Latin	23	8	20	14	14	7
German	27	12	15	16	6	15
French	31	29	20	22	21	20
History (Greek and Roman)	12	13	24	17	23	12
" (American and English)	32½	6	15	22	25	27
Algebra	47	43	42	48	19	19
Plane Geometry	41	27	18	16	31	22
Physical Science (Descriptive)	39	20	29	19	30	26
" " (Experimental)	8	27	13	18	11	19
ADVANCED STUDIES.						
Greek	58	20	43	20	55	10
Latin	24	9	52	19	52	29
Greek Composition	36	19	22	15	19	18
Latin Composition	50	28	48	19	39	26
German	33	24	19	19	0	14
French	25	28	29	26	29	29
Logarithms and Trigonometry	67	71	71	33	82	40
Solid Geometry	50	21	52	23	56	34
Analytic Geometry	0	40	100	36	. .	37
Mechanics or Advanced Algebra	. .	73	33	64	0	56
Physics	. .	22	. .	100	100	11
Chemistry	0	5	0	0	0	0

The next table shows the general results of the preliminary examinations of the four years in which the present system has been in operation. In order to secure a certificate, a candidate must ordinarily pass on studies occupying at least five hours on the examination programme, but for special reasons a certificate may be granted for a smaller number. The time assigned on the programme to the several studies is as follows: English, an hour and a half (but the fraction is neglected in the table); elementary Greek and Latin, and advanced Greek, Latin, German, French, physics, and chemistry, two hours each; all other studies, one hour each.

Number of candidates who passed in studies amounting to	1887.	1888.	1889.	1890.
Four hours	. .	. .	4	5
Five "	23	34	49	51
Six "	32	53	63	59
Seven "	45	68	54	76
Eight "	54	60	79	80
Nine "	16	24	16	29
Ten "	11	12	11	8
Eleven "	7	1	5	6
Twelve "	3	2	3	. .
Thirteen "	0	2	1	3
Fourteen "	1	. .	. .	2
Fifteen "	. .	. .	. .	1
Received certificates	192*	256	285	320
Failed to obtain a certificate	53	97	67	56
Whole number of candidates	245*	353	352	376

Under the somewhat stricter regulations adopted by the Faculty in 389, as detailed in my last report, a satisfactory improvement has een effected in the attendance of students at lectures and recitations. he appointment of an additional officer whose chief function was to pervise the records of attendance and to consider excuses for sence, made it possible to hold students to a careful observance of eir appointments, without returning to the artificial and mechanical ethods of enforcing attendance which the Faculty discarded ten ars ago. It cannot be said that the greater regularity of attendance s produced any conspicuous improvement in scholarship; the neral appearance of the records in this respect remains about the me, and the losses of the four classes of last year due to failure in holarship, while slightly less than those of 1889, are somewhat reater than those of 1888. The figures are: in 1888, 5.31 percent; 1889, 5.89 percent; in 1890, 5.75 percent. This accords with e experience of the Faculty at the time when the first steps were ken towards the abolition of the compulsory system, and at every bsequent step in that experiment; as Dean Gurney remarked in s report for 1874–75, the influence of the change upon the average scholarship was imperceptible either for good or for evil. On the other hand the greater strictness of last year was brought about without impairing the admirable spirit in the students which has been fostered by the liberal policy of recent years. In administering the discipline of the College the Faculty was called upon in only a few cases to resort to severe penalties, and most of these had no relation to the question of good order. For dishonesty in connection with written or laboratory work, one Junior and one Freshman were suspended, each for a period equal to about half the year; and one Sophomore was dismissed. The probation of one Freshman was closed, and two Special Students were deprived of their privileges, for persistent neglect of their studies. For disorderly conduct, three Freshmen were suspended for short periods.

---

* In 1887 seventy-six candidates were examined by the old method, of whom fifty-nine received tificates crediting them with subjects on the new list corresponding to those on which they had sed. The whole number of candidates in 1887 was therefore 321, and the number of those who eived certificates was 251.

The instruction given in the College in the year 1889–90 is set forth in detail in the tables on the following pages, which contain a statement of the work done in each course, the names of the instructors, the number of hours a week of instruction, and the number of students of various classes and departments,* as well as the total number of students, in regular attendance. To furnish a complete view of the scheme of instruction, all the courses are included in the list, — those omitted for the year as well as those actually given. Of the omitted courses, those which were not offered are distinguished by a bracket ([ ) ; the rest were withdrawn when it appeared that they had not been taken by a sufficient number of competent students. A star (*) indicates that a course could be taken only with the previous consent of the instructor.

In addition to these courses, which may be counted towards the degree of Bachelor of Arts, instruction in Elocution was given to voluntary classes by Mr. Hayes.

In preparing the Announcement of Instruction for 1890–91 it was necessary to keep in view the prospective organization of the College with the graduate department and the Scientific School under a single faculty. This led to the insertion of the courses in Engineering — the only courses of the Scientific School not in the College Faculty's list — immediately after the mathematical courses, and brought up again the question of separate lists of courses for the graduate and undergraduate departments. Since 1882, when the Academic Council surrendered the supervision of the graduate courses — which indeed it had exercised only in name — to the College Faculty, there has been no attempt to draw a line between these courses and those designed for undergraduates, but all the instruction in each department, from the most elementary to the most advanced, has been arranged in a single list. The growth of this instruction in extent and variety, the successive steps of which have been recorded from year to year in these reports, suggested further the expediency of a more systematic arrangement than had before been attempted, and also of a greater approach to uniformity in the use of certain terms which had been employed to designate new methods of advanced instruction.

---

* To designate the various kinds of students in the several courses, the following abbreviations are used: Gr. for Graduate Student, Se. for Senior, Ju. for Junior, So. for Sophomore, Fr. for Freshman, Sp., for Special Student, Sc. for Scientific Student, Di. for Divinity Student, Law for Law Student, Me. for Medical Student, Ve. for Student in Veterinary Medicine, and Bu. for Student of the Bussey Institution.

The reasons which led the Faculty in 1882 to throw the graduate and undergraduate courses into one list were found to be no less conclusive now. The courses at the lower end of the list in almost every department were clearly unsuitable to offer to a graduate student, and those at the upper end were quite beyond the reach of the ordinary undergraduate; but between these extremes there was found in most cases a belt of varying width, embracing courses in which graduates and undergraduates sit side by side under the same instructor. The Faculty recognized the necessary existence of this common ground by providing a tripartite classification, to be used in each department so far as applicable. The three classes are distinguished as 'Courses primarily for Undergraduates,' 'Courses for Graduates and Undergraduates,' and 'Courses primarily for Graduates.' The first class is not included in the Announcement of the Graduate School, and the courses in it, though open to any graduate student who desires the instruction, are not ordinarily counted towards any of the higher degrees. On the other hand undergraduates are admitted to a course of the third class only on the recommendation of the instructor.

This scheme was applied with such variations of detail as the conditions of the instruction in the several departments called for. The three groups are all represented in the departments of English, German, French, Philosophy, Political Economy, Fine Arts, Mathematics, Physics, Chemistry, Botany, Zoölogy, and Geology. In the Semitic and Indo-Iranian languages and in Music only the second and third groups appear; in Greek and Latin only the first and second, the Greek and Latin courses designed especially for graduates being grouped together under the new head of Classical Philology. In Engineering, likewise, only the first two groups are found. In Germanic and Romance Philology, on the other hand, all the courses are primarily for graduates. In three departments only is the middle

COURSES OF INSTRUCTION, 1889–90.

Instructors.	COURSES.	Hours per week.	Students.	Total number of students.
	SEMITIC LANGUAGES.			
Prof. Lyon	1. Hebrew. — Davidson's Introductory Hebrew Grammar. — Explanation of parts of Genesis and of the Psalm-book	3	1 Se., 1 So., 1 Fr., 1 Sp., 6 Di.	10
Prof. Toy	2. Hebrew (Second Course). — Syntax. — Driver's Hebrew Tenses. — Informal lectures. — Interpretation of parts of the books of Kings, Micah, Ezekiel, Psalms, and Ecclesiastes, with grammatical, textual, literary, and historical criticism. — Private reading of Hebrew text	2	1 Gr., 1 Ju., 1 Sp., 3 Di.	6
Prof. Lyon	3. Classical Aramaic (Syriac). — Grammars of Uhlemann and Nöldeke. — Rödiger's Chrestomathy. — The Peshitto version of the New Testament	2 1st half-year	1 Gr., 1 Di.	2
Prof. Lyon	10. Jewish Aramaic.—Kautzsch's Biblisch-Aramäische Grammatik.—Brown's Aramaic Method. — Interpretation of selections from the Targums, and from Daniel and Ezra	2 2d half-year	1 Gr., 2 Di.	3
Prof. Lyon	4. Assyrian. — Lyon's Assyrian Manual. — Delitzsch's Assyrische Lesestücke	2	Omitted in 1889–90.	
Prof. Lyon	5. Assyrian (Second Course). — Delitzsch's Assyrische Grammatik. — The Cuneiform Inscriptions of Western Asia (interpretation of selections)	2	1 Gr.	1
Prof. Toy	7. Arabic. — Lansing's Grammar. — Reading of parts of Genesis and of the Thousand and One Nights, with frequent grammatical exercises, and comparisons with Hebrew	2	1 Gr., 1 Ju., 1 Sp.	3
Prof. Toy	8. Arabic (Second Course)	2	Omitted in 1889–90.	

Prof. Toy	9. Ethiopic. — Dillmann's Grammatik and Chrestomathia. — Study of inflections and vocabulary, with comparison of Arabic, Hebrew, and Assyrian. — Reading of selections from the Chrestomathy, including some poetical pieces, and then of portions of Enoch (Dillmann's text), with literary criticism	1	1 Gr.	1
Prof. Toy	11. General Semitic Grammar	1	Not given.	
Prof. Lyon	6. Babylonian-Assyrian History from native sources, with comparison of the Greek and Roman writers	1	2 Gr., 1 Ju., 1 Di.	4
Prof. Lyon	12. History of Israel, political and social, from the period of the Judges until Ezra	2	3 Se., 2 Sp., 14 Di.	19
Prof. Toy	13. History of the Hebrew religion, with comparison of other Semitic religions. — Recitations and lectures. — Reading and discussion of parts of W. R. Smith's Old Testament in the Jewish Church and Kuenen's Religion of Israel. — The lectures first gave a general view of the history of the religion by periods, and then examined at length various topics, such as the ideas of the supernatural powers, good and bad, the moral constitution of man, etc.	2	1 Ju., 1 So., 13 Di.	15
Prof. Toy	14. Political and Social History of the Spanish Califate, with a brief sketch of the contacts between the Semitic and the Indo-European races, and an introductory account of the califates of Medina and Damascus. The history of culture was treated under the heads of government, family-life, education, literature (especially history and philosophy), and religion, with occasional reference to the position of the Jews in Moslem Spain, and the influence of Moslem and Jewish thought on Christian Europe	1	2 Gr., 1 Se.	3

COURSES OF INSTRUCTION. — CONTINUED.

	INDO-IRANIAN LANGUAGES.			
Prof. Lanman	1. Sanskrit. — Perry's Primer (Sanskrit into English and English into Sanskrit, lessons 1–15). — Whitney's Grammar. — Lanman's Reader (Nala and Hitopadeça, pp. 1–44)	3	2 Gr., 2 Se., 1 Sp.	5
Prof. Lanman	2. Sanskrit (Advanced Course). — The epic Çakuntalā (Mahā Bhārata I. 71–74). — Kālidāsa's drama, Çakuntalā. — Bhartṛhari's Apothegms (the Nīti Çataka and one third of the Vāirāgya Çataka)	3	1 So.	1
Prof. Lanman	3. The Vedas. — Selected hymns of the Rigveda and Atharvaveda	3 from Christmas	1 Gr.	1
Prof. Lanman	4. Old Iranian. — Reading of the Avesta	3	Omitted in 1889–90.	
Prof. Lanman	[5. Pāli. — The Sacred Books of Buddhism	3	Omitted in 1889–90.	
	GREEK.			
	INTRODUCTORY LECTURES for Freshmen studying Greek (open to the public):			
Dr. Morgan	(1) On Lysias and his Times.			
Dr. Tarbell	(2) On Socrates.			
Prof. Wright	(3, 4) On Homer.			
Prof. J. W. White	(5, 6) On the Greek Theatre.			
Dr. Rolfe	*A.* Herodotus (Goodwin's Greek Reader, pp. 112–181, and parts of Book I.). — Homer (Books I., II., III., IV., and VI., with selections from other Books of the Iliad). — Reading at sight	3	2 Se., 2 Ju., 15 Fr., 7 Sp., 1 Sc.	27
Dr. Tarbell	*F.* Greek Prose Composition (Elementary Course). — Sidgwick's First Greek Writer. — Extempore exercises based on easy passages in Greek prose writers	3 a fortnight	1 Se., 1 Ju., 1 So., 5 Fr., 2 Sp.	10

Prof. Allen and Drs. Tarbell and Morgan	*B.* Lysias (Orations vii., xii., xvi., xxiv.) — Plato (Apology and Crito). — Homer (Odyssey, Books VII.–X.). — Euripides (Medea). — Reading at sight	3	3 So., 71 Fr., 1 Sp. (sections)	75
Prof. Wright and Drs. Tarbell and Morgan	*C.* Lysias (Orations xiii., xiv., xxii, xxxii.). — Plato (Apology and Euthyphro). — Homer (Odyssey, Books I.–VI.). — Aristophanes (Clouds). — Reading at sight	3	1 So., 39 Fr., 1 Sp., 1 Sc. (Two sections)	42
Dr. Morgan	*E.* Greek Prose Composition (Second Course). — Sidgwick's Introduction (Parts I. and II.). — Written composition once a week. — On Mondays, practice in composition at sight. — On alternate Fridays, study of Goodwin's Moods and Tenses	3 a fortnight	2 Gr., 2 Se., 1 Ju., 4 So., 11 Fr.	20
Dr. Morgan	1. Lucian (Selections). — Demosthenes (Philippics). — Lyric Poets (selections). — Euripides (Alcestis and Iphigenia in Tauris). — Practice, oral and written, in reading at sight. — Lectures on the lives and works of the authors read, on the political and literary history of their times, and on illustrations of Greek myths in art. — Frequent oral tests and two-hour examinations	3	1st half-year: 3 Se., 11 So. 2d half-year: 2 Se., 2 Ju., 12 So.	14 16
Prof. J. W. White	2. Aristophanes (Birds). — Sophocles (Oedipus Tyrannus). — Aeschylus (Prometheus Bound). — Thucydides (Book I.). — Collateral reading of the Plutus of Aristophanes and Antigone of Sophocles. — Reading at sight	3	2 Gr., 4 Se., 7 Ju., 33 So., 4 Fr.	50
Prof. Wright	3. Greek Prose Composition (Third Course). — Sidgwick's Introduction (Part III.); miscellaneous exercises. — Translation and original composition. — Oral exercises	1	1 Se., 6 Ju., 15 So., 1 Fr.	23
Mr. C. P. Parker	5. Herodotus (Books I.–III.). — Xenophon (Oeconomicus). — Plutarch (Pyrrhus and part of Marius). The main object of the course was the acquisition of facility in accurate reading	3	2 Se., 1 Ju., 1 Sp.	4

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Wright	6. *First half-year:* Demosthenes (On the Crown, with parts of the Embassy) and Aeschines (Against Ctesiphon). — Lectures on the life, times, and art of Demosthenes, and on Greek oratory *Second half-year:* Aeschylus (Seven against Thebes). — Sophocles (Electra). — Aristophanes (Frogs). — Private reading of one additional play. — Lectures on historical and literary questions and on metres. — Studies on the Electra (text, scholia, special miscellaneous topics, with written English versions) by members of the course	3	5 Se., 17 Ju., 1 So.	23
Prof. Wright	7. Greek Prose Composition (Fourth Course). — Written composition in the style of Plato and of Demosthenes, with studies of classical models. — Translation of selections of standard English (philosophical and rhetorical). — Original composition, prepared and *ex tempore*, on themes suggested by previous reading	1	2 Gr., 10 Se.	12
Prof. J. W. White	[4. The Plays of Aristophanes, with lectures on the scenic and private antiquities	2 or 3	Omitted in 1889–90.	
Prof. Wright	8. *First twenty weeks:* Plato (Phaedrus, Phaedo, and selections from the Republic). — Lectures and studies on topics in pre-Aristotelian Greek philosophy, from the sources (Ritter and Preller, Historia philosophiae graecae) *Last fifteen weeks:* Aristotle (Ethics I.–IV., VIII. 1–5, IX. 8–12)	3	1 Gr., 12 Se., 1 Ju., 1 So.	15
Dr. Tarbell	9. Aeschylus (Agamemnon and Eumenides) — Pindar (selections from the Olympian and Pythian Odes). — Aristotle (Poetics)	3	Omitted in 1889–90.	
Prof. J. W. White	10. The Life of the Ancient Athenians, described and illustrated by the aid of the Literature and the Monuments. — Lectures (twice a week) with illustration by stereopticon (once a week). — Two theses in elementary investigation of subjects relating to Greek life required of each student.	3	1 Gr., 17 Se., 13 Ju., 7 So., 5 Fr., 4 Sp.	47

Prof. Wright	[*16. Introduction to Greek Epigraphy. — Inscriptions from the point of view of Archaeology and History. — Practical exercises	2 or 3 2d half-year	Omitted in 1889–90.	
Dr. Tarbell	18. The Results of Archaeological Research in Greek Lands since 1874 (selected topics). — Lectures on Topography, Architecture, and Sculpture, with collateral reading and occasional theses by the students	2	1 Gr., 1 Se., 1 Ju.	3
Prof. Allen	11. History of Greek Literature from the earliest beginnings to the fall of Constantinople. — Lectures, with direction of the students' private reading	3	4 Gr., 1 Se., 3 Ju.	8
Prof. Goodwin	[*13. Aristotle (Politics)	2 2d half-year	Omitted in 1889–90.	
Prof. Goodwin	[*14. Thucydides (selections from the speeches and the more difficult parts of the narrative)	2 2d half-year	Omitted in 1889–90.	
Prof. Goodwin	[*15. The Political and Legal Antiquities of Athens, illustrated by the Legal Orations of Demosthenes and other Attic Orators	2	Omitted in 1889–90.	
	LATIN.			
Mr. C. P. Parker	*A.* Cicero (selected orations). — Virgil (Aeneid, VII.–XI.). — Reading at sight	3	3 Ju., 7 Fr., 17 Sp., 2 Sc.	29
Mr. C. P. Parker	*F.* Latin Composition (Elementary Course). — Study of Nepos (lives of Miltiades, Themistocles, Alcibiades, Epaminondas, and Hannibal) with translation into Latin of exercises based on them. — Review of syntax. — Lectures, questions, and correction of exercises	3 a fortnight	2 Se., 3 Ju., 1 So., 5 Fr., 3 Sp., 1 Sc.	15
Prof. Greenough and Mr. Nicolson	*B.* Livy (Books XXI. and XXII. 1–34). — Terence (Adelphoe and Andria). — Cicero (De Amicitia). — Reading at sight	3	1 Se., 9 So., 71 Fr., 5 Sp. (Two sections.)	86

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Greenough, Dr. Rolfe, and Mr. Nicolson	*C.* Livy (Books I. and II. 1–32). — Terence (Phormio and Heautontimorumenos). — Cicero (De Amicitia). — Reading at sight	3	1 Ju., 3 So., 87 Fr. 5 Sp., 2 Sc. (Four sections.)	98
Prof. Smith	*D.* (*Advanced Course for Freshmen.*) Cicero (portions of the Brutus). — Livy (Book I. and parts of II.). — Terence (Phormio and Andria). — Reading at sight	3	2 So., 28 Fr.	30
Mr. Nicolson	*E.* Latin Composition (Second Course). — Written translation into Latin of the first 35 exercises in Preble and Parker's Handbook. — Practice (once a fortnight) in the translation into Latin at sight of selected passages of historical narrative. — Criticism and discussion of the translations in class	3 a fortnight	1 Gr., 1 Se., 2 Ju., 8 So., 11 Fr.	23
Prof. Lane	1. Pliny (Selected Letters). — Tacitus (Dialogus; Histories, Book I.). — Horace (Odes and Epodes). — Reading at sight	3	1 Gr., 1 Se., 4 Ju., 42 So., 2 Fr., 1 Sp.	51
Mr. C. P. Parker	2. Pliny (58 Letters). — Cicero (selections from the Tusculan Disputations). — Horace (Odes, I.–III., with selections from IV. and the Epodes. — Reading at sight	3	2 Se., 3 Ju., 37 So., 2 Fr.	44
Mr. C. P. Parker	3. Latin Composition (Third Course). — Exercises, chiefly from Preble and Parker's Handbook of Latin Writing. — One original composition. — Study of style. — Lectures and personal conferences	1	3 Se., 6 Ju., 16 So., 1 Fr.	26
Prof. Greenough	[4. Horace (Satires and Epistles)	3 2d half-year	Omitted in 1889–90.	
Prof. Greenough	5. Ancient Philosophy, as set forth by Cicero (De Finibus; Academica)	3 1st half-year	1 Gr., 2 Se., 6 Ju., 6 So., 1 Fr., 1 Sp.	17
Prof. Allen	9. Practice in speaking Latin. — Prepared oral exercises (chiefly brief expositions of assigned topics) and extemporaneous conversation	2	2 Gr., 1 S	

Prof. Smith	6. *First half-year:* Tacitus (Annals, Books I.–IV.)	3	3 Se., 21 Ju., 3 So., 2 Sp.	29
	Second half-year: Juvenal (Satires 1, 3–5, 7, 8, 10, 13). — Martial (162 epigrams)	3	5 Se., 23 Ju., 4 So., 1 Sp.	33
Prof. Greenough	7. Practice in Latin expression and style. — Study of selections from classical prose models.—Original compositions in narrative and augmentative style	1	3 Gr., 9 Se., 1 Ju.	13
Prof. Lane	8. Plautus (five plays. — Cicero (Brutus). — Catullus (selections). — Lucretius (Books I.–III., with selections from IV., V., and VI.)	3	2 Gr., 13 Se., 1 Ju., 1 So.	17
Prof. Greenough	[*10. Private Life of the Romans. — Study of special topics	2	Omitted in 1889–90.	
Prof. Allen	*11. The Roman Religion and Worship. — Reading of Ovid's Fasti, lectures, and research	3 1st half-year	1 Gr.	1
Prof. Lane	[*12. Latin grammar. — Investigation and discussion of special topics	1	Omitted in 1889–90.	
Prof. Greenough	*14. Latin grammar (syntax)	2 or 3 2d half-year	1 Gr., 2 Se., 2 Ju., 1 So.	6
	GREEK AND LATIN.			
Prof. Greenough	[*1. Greek and Latin Comparative Philology	3	Omitted in 1889–90.	
Profs. Lane and Allen	*2. Practice in Text-criticism and Interpretation of Greek and Latin authors. — Aeschylus's Seven against Thebes (vv. 1–400) and portions of Cicero's Republic	3	5 Gr.	5
	ENGLISH.			
Profs. A. S. Hill and Wendell, and Mr. Carpenter	*A.* (Prescribed for Freshmen.) Rhetoric and English Composition. — A. S. Hill's Rhetoric. — Lectures (first half-year, two lectures a week, based on Part I. of the text-book; second half-year, one lecture a week, based on Part II. of the text-book, and one on some master of English literature in the eighteenth century, a portion of whose works the students were asked to read). — Written exercises and oral discussions (once a week)	3	1 Gr., 2 Se., 3 So., 301 Fr., 50 Sp., 8 Sc.	365

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Wendell, and Messrs. Clymer, Kittredge, Carpenter, and Baker	*B.* (Prescribed for Sophomores.) Twelve Themes (one reminiscence, two descriptions, two narratives, one summary, one criticism, two expositions, and two arguments; the choice of the twelfth subject was left to the writers). — Lectures and discussions of themes (once a week). Each theme was returned to the student, carefully criticised in writing, to be subsequently handed back to the Instructor, revised or rewritten in accordance with his criticisms		6 Se., 14 Ju., 224 So., 10 Fr., 23 Sp., 2 Sc.	279
Messrs. Thompson and Baker	*C.* (Prescribed for Juniors.) Forensics. — Ten lectures on Argumentative Composition. — Ten lectures (choice of topics; construction of briefs; narrative in argument; essential qualities of an argument (two); the selection and the massing of evidence (three); methods of persuasion; comments on specimen forensics). — Four forensics, preceded by briefs. — Discussions of briefs and forensics		1 Gr., 18 Se., 235 Ju., 7 So., 1 Fr., 10 Sp., 1 Sc.	273
Messrs. Baker and Thompson	*D.* (Prescribed for Seniors.) Forensics (second course, conducted on the same plan as Course *C*)		268 Se., 9 Ju., 1 So., 3 Sp.	281
Prof. Briggs, and Messrs. Dodge and Thayer	12. English Composition. — Daily themes (one page long) and fifteen longer themes: all these were criticised by instructors, and the longer themes were revised or rewritten. — Lectures once a week. — Criticism by students (each reading a theme written by another) once a fortnight. For discussion of themes with the Instructor the class was divided into sections, each section meeting the Instructor once a fortnight	3	1 Gr., 57 Se., 78 Ju., 5 Sp., 1 Sc., 1 Di.	143
Prof. A. S. Hill	*5. English Composition (Advanced Course)	3	1 Gr., 9 Se., 3 Ju., 1 Sp.	14

Prof. Hart, and Messrs. Hayes and Mason	*6. Oral Discussion of Topics in Political Economy and History. — Preparation of a written brief, and discussion as a principal disputant by each student four times a year. — Speaking from the floor by each student (not a principal disputant) at each exercise. Criticism by the Instructors on the delivery, and on the matter, arrangement, and manner of presentation	2	16 Se., 1 Di.	17
Prof. Child and Mr. Kittredge	3. English. — Sweet's Anglo-Saxon Reader. — Béowulf. — Exodus	3	5 Gr., 4 Se., 3 Ju., 3 Sp.	15
Prof. Child	[4. Early English. — Old English Literature from 1200 to 1450	3	Omitted in 1889–90.	
Prof. Child	1. English Literature. — Chaucer. — Recitations, with occasional lectures. The class read sixteen of the Canterbury Tales, with the Prologue; the Parliament of Fowls, and most of The Legend of Good Women. A class of Graduates read also about half of Troilus and Cressida	3	7 Gr., 14 Se., 14 Ju., 6 So., 3 Sp.	44
Mr. Kittredge	2. English Literature. — Shakspere (reading and interpretation of Othello, Twelfth Night, Hamlet, Henry V., The Winter's Tale, Antony and Cleopatra)	3	2 Gr., 42 Se., 23 Ju., 23 So., 9 Sp.	99
Prof. Wendell	[14. English Literature. — The Drama (exclusive of Shakspere) from the Miracle Plays to the Closing of the Theatres	1	Omitted in 1889-90.	
Prof. Wendell	*17. English Literature of the Elizabethan period, exclusive of the Drama and of Bacon. — Reading and discussion of selections from Wyatt, Surrey, Ascham, Foxe, Painter, Lyly, Sidney, Ralegh, Spenser, Shakspere, Marlowe, Chapman, Drayton, Davies, and Hooker. A definite amount of reading was prescribed for each week. Each student was asked to hand in weekly notes of his reading. In the course of the year each student gave one lecture on the subject considered by the class during the week in question. The remaining lectures were given by the Instructor	1	2 Gr., 7 Se., 2 Ju., 1 Sp., 1 Sc.	13

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Briggs	[*15. English Literature of the Seventeenth Century	2 2d half-year.	Omitted in 1889–90.	
Prof. A. S. Hill	[7. English Literature of the Eighteenth Century	2 1st half-year	Omitted in 1889–90.	
Prof. A. S. Hill	8. English Literature. — Poets of the Nineteenth Century	2 1st half-year	1 Gr., 20 Se., 15 Ju., 23 So., 8 Sp.	67
Mr. Clymer	9. English Literature. — Prose Writers of the Nineteenth Century. — Lectures on Sydney Smith, Cobbett, De Quincey, Lamb, Hunt, Hazlitt, Landor, Macaulay, Carlyle, Newman, Arnold, Ruskin, and other essayists; and on Jane Austen, Scott, Peacock, Bulwer, Disraeli, Dickens, Thackeray, Kingsley, Charlotte and Emily Brontë, Trollope, George Eliot, and other novelists. — Weekly notes on reading by the students	1	21 Se., 9 Ju., 41 So., 2 Fr., 7 Sp.	80
Prof. Briggs	*16. History and Principles of English Versification. — Lectures (once a week) on the origin and the development of the most important English metres. The students gave the Instructor weekly notes on their reading, and prepared theses on subjects approved by him	1	2 Gr., 4 Se., 3 Ju., 3 So., 1 Sp.	13
Mr. Hayes	*10. Elocution	2	1 Gr., 13 Se., 9 Ju., 2 So., 3 Sp.	28
	[20. English Literature. — Study of special topics		Omitted in 1889–90.	
	GERMAN.			
Profs. Bartlett, Sheldon, Francke and Von Jagemann	Six lectures on German Literature, for Freshmen, in November and December			

Prof. von Jagemann and Mr. Hochdörfer	*A.* Elementary Course (prescribed for Freshmen who did not present German for admission). — Sheldon's Grammar. — Grimm (Märchen). — Storm (Immensee). — Zschokke (Der zerbrochene Krug). — Bernhardt's Lesebuch, Vol. II. — Reading at sight. — Translation into German of easy connected prose	3	1 Gr., 2 Ju., 2 So., 149 Fr., 24 Sp., 17 Sc. (Five sections.)	195
Prof. Bartlett	1*a*. Modern Essays, Drama, and Lyrics. — Selections from the Prose of Kähler, Zschokke, Hartmann, Gerstäcker, Heyse, Freytag, Hoffmann, and Goldammer. — German Lyric Poetry. — Weekly practice in composition. — Oral exercises	3	1 Gr., 4 Se., 3 Ju., 76 So., 47 Fr., 10 Sp., 7 Sc. (Partly in three sections)	148
Prof. von Jagemann	1*b*. Schiller's Prose (Der Geisterseher; Geschichte des Abfalls der Niederlande). — Goethe (Egmont). — Hauff (Lichtenstein). — Translation into German of simple historical prose. — During the second half-year the greater part of the time in class was devoted to practice in reading at sight	3	4 Se., 7 Ju., 26 So., 23 Fr., 3 Sp., 3 Sc., 1 Di.	67
Prof. Francke	2. German Literature of the Nineteenth Century. — Schiller (Jungfrau von Orleans and Braut von Messina). — Kleist (Hermannsschlacht and Prinz von Homburg). — Grillparzer (Medea). — Uhland (Ballads and Ernst von Schwaben). — Rückert (Nal und Damajanti). — Heine (Buch der Lieder; Nordseebilder). — Hosmer's History of German Literature. — Weekly compositions	3	1 Gr., 2 Se., 7 Ju., 12 So., 16 Fr., 5 Sp.	43
Prof. Bartlett	3. German Literature of the Eighteenth Century (First Course). — Lessing's Life and Works (Minna von Barnhelm; Emilia Galotti). — Schiller's Life and Works (Der Neffe als Onkel; Die Jungfrau von Orleans; Don Carlos; Die Braut von Messina; Wallenstein; Das Lied von der Glocke; Ballads and Lyrics.) — Selections from the Poetry of Uhland. — Weekly composition. — Practice in writing and speaking German	3	1 Gr., 6 Se., 26 Jr., 22 So., 9 Fr., 5 Sp.	69
Prof. Francke	5. Goethe; a study of his life and work. — Lectures and recitations. — Four theses were written during the year	3	1 Gr., 7 Se., 4 Ju., 4 So., 3 Fr.	19

COURSES OF INSTRUCTION. — Continued.

Prof. Francke	*6. History of German Literature and Art from the Reformation to the middle of the Nineteenth Century. — Lectures and theses. — Each member of the class gave one lecture, during the year, on subjects connected with the course	2	1 Gr., 3 Se., 1 Ju., 3 So., 1 Fr.	9
Prof. Francke	[*7. History of German Literature and Art in the Middle Ages	2	Omitted in 1889–90.	
Prof. von Jagemann	8. Nibelungenlied. — Kudrun. — Hartmann's Der arme Heinrich. — Wolfram's Parzival. — Walther von der Vogelweide. — Reading and translation into modern German of selected portions. — Collateral reading. — Lectures on the history of German literature in the Middle Ages	2 or 3	1 Gr., 1 Se., 1 Ju.	3
	[*9. Practice in writing and speaking German	1 or 2	Omitted in 1889–90.	
Prof. Francke	*20. Special Advanced Study and Research in the History of German Literature. The subjects treated in 1889–90 were: (1) Goethe's attitude toward Germany. (2) Goethe's ethics	1	1 Gr., 1 Se.	2
	GERMANIC PHILOLOGY.			
Prof. Sheldon	1. Gothic	1 or 2	Omitted in 1889–90.	
Prof. von Jagemann	2. Relation of Old High German to the other Germanic dialects. — Old High German Grammar, with special reference to the explanation of modern German forms. — Interpretation of texts in Braune's Althochdeutsches Lesebuch	1 or 2	3 Gr., 1 Ju.	4
Mr. Kittredge	3. Icelandic (Old Norse). — Selections from the Sagas and the Elder Edda. (Gylfaginning, Völsungsaga, Gunnlaugssaga, Ormstungu, and most of the Elder Edda. — Noreen's Altisländische Grammatik)	3	4 Gr., 1 Se.	5

FRENCH.

Prof. de Sumichrast	*A.* Elementary Course (prescribed for Freshmen who did not present French for admission). — Chardenal's First and Second French Courses in full. — Elementary Syntax. — Translation at sight of French into English and English into French. — Reading of French at sight. — Dictation in French. — Study of the Irregular Verbs. — Bôcher's Reader. — Halévy (l'Abbé Constantin). — Erckmann-Chatrian (Madame Thérèse). — George Sand (la Mare au Diable). — Labiche (la Poudre aux Yeux)	3	1 Se., 2 Ju., 4 So., 29 Fr., 30 Sp., 4 Sc., 1 Law (Two sections twice a week)	71
Profs. Cohn, Sanderson, and de Sumichrast	1. Modern plays and novels: Sandeau (Mademoiselle de la Seiglière). — Victor Hugo (Hernani). — G. de Peyrebrune (les Frères Colombe). — Dumas (les Trois Mousquetaires). — George Sand (Marianne). — About (les Mariages de Paris). — Classical writers of the Seventeenth Century: Corneille (Horace). — Racine (Andromaque). — Molière (l'Avare). — La Fontaine (Fables, Book I.). — In addition to the foregoing each student read outside one 12^{mo} volume selected by himself and approved by the Instructor, and eight fables of La Fontaine were committed to memory. — Readings and easy lectures in French. — Grammar and Composition (Roulier's second book, to page 164). — Writing from dictation	3	1 Gr., 4 Se., 10 Ju., 42 So., 112 Fr., 25 Sp., 10 Sc. (Five sections twice a week)	204
Profs. Bôcher and Sanderson	2. La Fontaine. — Corneille. — Racine. — Molière. — Beaumarchais. — Sainte-Beuve. — Alfred de Musset. — Balzac. — Grammaire historique. — Dictations in French history. — Short themes (three a month) giving summaries of the works read in class. — Some of La Fontaine's fables committed to memory	3	1 Gr., 7 Se., 12 Ju., 37 So., 52 Fr., 12 Sp., 2 Sc. (Two sections)	123

COURSES OF INSTRUCTION. — CONTINUED.

Profs. Bôcher and de Sumichrast	3. Lectures on the History of French Literature from its origin to the present day. — Particular study and analysis of Corneille (Le Cid, Horace, Cinna, Polyeucte); Racine (Britannicus, Andromaque, Mithridate); Molière (les Précieuses Ridicules, les Femmes Savantes, le Médecin malgré lui, le Tartuffe); Boileau (l'Art Poétique); Bossuet (Oraison Funèbre d'Henriette de France); La Bruyère (Des Ouvrages de l'Esprit); Voltaire (Lettres choisies); J. J. Rousseau (Morceaux choisis); Victor Hugo (Quatre-Vingt-Treize); George Sand (le Marquis de Villemer); Daudet (Choix d'Extraits and Contes); Pailleron (le Monde où l'on s'ennuie). — Frequent themes on subjects connected with the course. — Memorizing of passages from Corneille, Racine, and Boileau	3	1 Gr., 16 Se., 20 Ju., 28 So., 12 Fr., 7 Sp.	84
Profs. Cohn and Sanderson	4. History of French Literature in the Seventeenth Century. — Descartes (Discours de la Méthode); Corneille (le Cid, Horace, Cinna, Polyeucte, Rodogune, Nicomède, le Menteur); Pascal (les Provinciales); Molière (Théâtre Complet); Racine (Théâtre Complet, Lettres à l'auteur des Hérésies Imaginaires); Boileau (l'Art Poétique, Satires, Epîtres); La Fontaine (Fables); La Rochefoucauld (Maximes); Mme. de Sévigné (Lettres choisies); Bossuet (Oraisons Funèbres, Sermon sur la Mort); La Bruyère (les Caractères); Mme. de Maintenon (Choix de Lettres et Entretiens); Fènelon (Lettre sur les Occupations de l'Académie Française); Saint-Simon (Extraits des Memoires). — Additional private reading. — Each student made a weekly report of his reading, and wrote three French themes, averaging 2000 words each, during the year	3	3 Gr., 12 Se., 6 Ju. 8 So., 5 Fr., 1 Sp.	35

Prof. Böcher	5. Lectures on French History and Literature from the time of the accession of the house of Valois in 1328 to the end of the Sixteenth Century. — Reading and analytical study of texts, — Montaigne, Froissart, Commines, Rabelais, Villon, Charles d'Orléans, Marguerite de Valois, Marot, Montluc, Calvin, Amyot, Du Bellay, Ronsard and the Pléiade, Agrippa d'Aubigné. — Themes	2	3 Gr., 11 Se., 11 Ju., 2 So., 2 Fr.	29
Prof. Cohn	[6. French Literature to the accession of the house of Valois	2	Omitted in 1889–90.	
Prof. Böcher	[8. Translation and reading at sight	1	Omitted in 1889–90.	
Profs. de Sumichrast and Cohn	9. Practice in writing and speaking French (Elementary Course). — Worman and Rougemont's Grammaire française. — Blouët's Class-Book of French Composition. — Rougemont's La France. — Conversation on grammar in connection with composition, and on the history and condition of France. — Discussion of questions, participated in by the whole class	2	3 Se., 10 Ju., 31 So., 25 Fr., 7 Sp., 2 Sc., 1 Law (Two sections)	79
Prof. Sanderson	10. Practice in writing and speaking French (Intermediate Course). — Compositions and dictations. — Conversation on selected subjects in French history, or on topics of the present time	2	1 Gr., 6 Se., 6 Ju., 14 So., 6 Fr.	33
Prof. Cohn	11. Short weekly compositions. — Oral reports on articles in the Revue Politique et Littéraire of Paris. — Conversations on political events of the Nineteenth Century, based upon D. Blanchet's Histoire Contemporaine and the Almanach de Gotha for 1889 and 1890. — Six oral discussions	2	3 Gr., 4 Se., 5 Ju., 3 So., 2 Sp.	17
Prof. Cohn	*20. Special Research in French Literature. — Each student was assigned special work in the field chosen by him, and in addition to reporting from time to time on work done, wrote two elaborate theses on subjects assigned by the instructor		2 Gr.	2
	Courses 2, 3, 4, 5, 6, 9, 10, and 11 are conducted in French			

COURSES OF INSTRUCTION. — CONTINUED.

	ITALIAN.			
Prof. Sheldon	1. Grandgent's Italian Grammar. — Cordelia (Vita Intima, selections). — Colombi (Dopo il Caffè, about 190 pages). — Farina (Il Signor Io). — Easy exercises in writing Italian, based on passages in the works read	3	9 Se., 13 Ju., 12 So., 5 Fr., 3 Sp., 1 Sc.	43
Prof. Sheldon	2. Torquato Tasso (Gerusalemme Liberata). — Ariosto (about half of the Orlando Furioso). — Machiavelli (Il Principe). — Pulci (Il Morgante Maggiore, six cantos). — Translation from English into Italian, based on modern Italian prose	3	2 Gr., 1 Se., 4 Ju., 2 So.	9
Prof. Nash	*3. Boccaccio, Petrarca, Dante. — History of Italian Literature	3	Omitted in 1889–90.	
	SPANISH.			
Prof. Nash	1. Del Mar's Grammar. — Gil Blas. — El Eco de Madrid. — Prose composition	3	13 Se., 10 Ju., 10 So., 5 Fr., 2 Sp., 1 Law	41
Prof. Nash	2. Modern Spanish Literature. — Nombela (La riqueza del pobre). — Moratin (El café; El sí de las niñas). — Herreros (Marcela). — Alarcon (El final de Norma; La Corneta de llaves; Viva el papa; Mayo; Fin de una novela; Una conversación en la Alhambra)	3	2 Gr., 4 Se., 4 Ju., 1 Law	11
Prof. Nash	*3. Calderon (El mágico prodigioso). — Lope de Vega (La estrella de Sevilla). — Cervantes (about one sixth of Don Quijote). — Early Spanish (the Poem of the Cid, about one sixth). — Outline of the History of Spanish Literature. — Composition. — The course was conducted chiefly in Spanish	3	1 Gr., 2 Se.	3

ROMANCE PHILOLOGY.

Prof. Sheldon	[1. Introduction to the Comparative Study of the Romance languages	2 1st half-year	Omitted in 1889–90.	
Prof. Sheldon	2. Phonetics, with special reference to the explanation of sound-changes in the Romance languages	2 2d half-year	Omitted in 1889–90.	
Prof. Sheldon	3. Old French. — Phonology and Inflexions. — The oldest texts. — La Chanson de Roland. — Joinville. — Aucassin et Nicolette. — La naissance du Chevalier au Cygne	2	3 Gr.	3
Prof. Sheldon	4. Provençal. — Language and Literature, with selections from the poetry of the Troubadours	2 2d half-year	1 Gr., 3 Se., 1 Ju., 1 So.	6
Prof. Sheldon	5. Low Latin. — Lectures on the characteristics of late vulgar Latin with special reference to Italy and the development of the Italian language. — Exercises in turning classical Latin into theoretical vulgar Latin. — Each student also read privately a specially assigned text, word-list, or study of one or more points of vulgar Latin	2 1st half-year.	2 Gr., 3 Se., 2 So.	7
Prof. Sheldon	[6. Old French dialects, with special reference to Anglo-Norman	2	Omitted in 1889–90.	
Prof. Sheldon	7. The French Element in English. — Lectures. — One thesis, consisting mainly of an etymological word-list to determine for each student the proportion of words from French to native words in a vocabulary of the commonest words used in conversation	1 or 2	2 Gr.	2
Prof. Sheldon	*20. Special Advanced Study and Research. — Studies in the Romance conjugation of verbs (criticism of written work). — Practice in text-criticism (Old French). — The results of a part of this work were embodied in a thesis	1	1 Gr.	1

COURSES OF INSTRUCTION. — CONTINUED.

	PHILOSOPHY.			
	INTRODUCTORY COURSES.			
Prof. Palmer	1. Greek Philosophy (from Thales through the Neo-Platonists). — Zeller's Outlines of the History of Greek Philosophy. — Portions of Plato and Aristotle. — Lectures	3	2 Gr., 10 Se., 23 Ju., 12 So., 1 Fr., 5 Sp., 2 Di.	55
Prof. James	2. Logic and Psychology. — Jevons's Elementary Lessons in Logic. — Ladd's Physiological Psychology. — Oral and written recitations, lectures, and experimental demonstrations	3	1 Gr., 36 Se., 35 Ju., 38 So., 5 Fr., 11 Sp., 2 Sc.	128
Prof. Royce	3. Psychology and General Introduction to Philosophical Study. — Introductory lectures on the nature and aims of Philosophical Study, and on the relations of Psychology to Philosophy at large. — Ladd's Physiological Psychology, with lectures. — Elementary study of the fundamental problems of Philosophy. — Lectures on Logic	3	2 Gr., 15 Se., 21 Ju., 17 So., 1 Fr., 9 Sp., 4 Sc.	69
	ADVANCED COURSES.			
Prof. Palmer	4. **Systematic Ethics. — The Theory of Ethics, considered constructively. — Lectures, theses, and private reading. — Each student was responsible for some standard treatise on Ethics, selected by himself, as well as for the matter of the lectures. — Four theses were written**	3	**5 Gr., 24 Se., 14 Ju., 1 So., 2 Sp., 3 Di.**	49
Dr. Santayana	5. **English Philosophy. — Berkeley's Principles of Human Knowledge (Fraser's Extracts). — Hume's Treatise of Human Nature (Book I.). — Reid's Essay on the Intellectual Powers of Man. — Lectures and discussions; two theses**	3	2 Gr., 3 Ju., 2 So., 2 Sp.	9

Dr. Santayana	6. Earlier French Philosophy, from Descartes to Leibnitz, and German Philosophy from Kant to Hegel. — Descartes' Discourse on Method, Meditations, and the first book of his Principles. — Leibnitz' Monadology. — Kant's Critique of Pure Reason. — Lectures	3	1 Gr., 2 Se., 2 Ju.	5
Prof. Royce	13. The Philosophy of Nature in its relations to Theology and Ethics. — Spinoza's Ethics. — Lectures on the history of the doctrine of Evolution. — Spencer's First Principles. — Leconte's Evolution in its Relation to Religious Thought. — Two theses	3	4 Gr., 13 Se., 7 Ju., 1 So., 1 Sp., 3 Di.	29
Prof. Peabody	11. The Ethics of Social Reform. — The modern social questions: Charity, Divorce, the Indians, Temperance, and the various phases of the Labor Question, as questions of practical Ethics. — Lectures, essays, and practical observations. — Students in this course made personal study of movements in charity and reform. They inspected hospitals, asylums, and industrial schools in the neighborhood, and the various labor organizations, coöperative and profit-sharing enterprises and movements of socialism, temperance, etc., within their reach. Four special reports were presented by each student, based so far as possible upon these special researches	2 or 3	1 Gr., 53 Se., 34 Ju., 9 So., 8 Sp., 7 Di.	112
Prof. Peabody	*10. The Philosophy of Religion: its rise, problem, and results. — Pfleiderer's Philosophy of Religion. — Caird's Philosophy of Religion. — Lectures and a thesis	1	2 Gr., 3 Se., 7 Di.	12
	COURSES FOR SPECIAL RESEARCH.			
Prof. James	20*a*. Questions in Psychology. — Lectures (two hours a week). — Laboratory work. — Theses on special subjects prepared by the students		6 Gr., 1 Se.	7
Prof. Royce	20*b*. The Development of the Hegelian System. — Hegel's Phänomonologie des Geistes. — Lectures. — Study by each student of a selected topic, the results presented in a thesis	2 to 4	7 Gr., 2 Di.	9

		year	1 Sc.	
Prof. Dunbar	[*9. Management and Ownership of Railways. — History of Railway Transportation	3	Omitted in 1889–90.	
Prof. Taussig	*20. Special Advanced Study and Research: (*a*) The Duties on Wool and Woolens since 1867 (*b*) The Tobacco Tax (*c*) Workmen's Insurance in the United States, with special reference to Railway Employees Meetings ordinarily once a fortnight for the discussion of sources and results.		3 Se.	3
	HISTORY.			
Prof. Channing	1. Mediaeval and Modern European History (introductory to Courses 5, 6, 8, 9, 10, 11, and 12). — Lectures and collateral reading	3	1 Se., 2 Ju., 46 So., 156 Fr., 34 Sp., 4 Sc.	243
Prof. Macvane	2. Constitutional Government (Elementary Course, introductory to Courses 11, 12, 13, and 17)	3 1st half-year	3 Se., 21 Ju., 76 So., 72 Fr., 35 Sp., 3 Sc.	210
Mr. Bendelari	3. History of the Development of Political and Legal Institutions in Rome to the Fall of the Republic	2 or 3	2 Gr., 10 Sc., 4 Ju., 2 So., 2 Fr., 2 Sp.	22
Mr. Bendelari	[4. Later Roman and Early Mediaeval History	2 or 3	Omitted in 1889–90.	
Prof. Emerton	[5. The Conflict of Christianity with Paganism. — Origin and development of the Roman Primacy to its alliance with the Holy Roman Empire	2	Omitted in 1889–90.	
Prof. Emerton	[6. The Mediaeval Church, with especial reference to its effect upon public life and upon intellectual and social progress	2	Omitted in 1889–90.	

COURSES OF INSTRUCTION. — CONTINUED.

Dr. Snow	8. History of Government and Administration in France from Charlemagne to Louis XIV. (the rise and decline of Feudalism, the growth of royal power, the communal system, the Parliaments, the States General, the Church, etc.)	3	3 Gr., 5 Se., 3 Ju.	11
Dr. Gross	9. Constitutional and Legal History of England to the Sixteenth Century. A detailed account of the constitutional history of England from the earliest times down to the end of the thirteenth century, with a general view of English constitutional history during the fourteenth and fifteenth centuries. Lectures covering this ground, and comments by the Instructor on documents printed in Stubb's Select Charters. — Three theses required of each student	3	2 Gr., 9 Se., 5 Ju., 3 So., 2 Sp., 2 Law	23
Dr. Allen	10. The Age of the Protestant Revolution, from the time of Boniface VIII. to the height of the Catholic reaction under Philip II. The growth of the national consciousness and the decline of the civil and ecclesiastical supremacy of the papacy; the popes at Avignon; the papal schism; reformatory councils; rise of Humanism in Italy; its extension into Germany, France, and England; decline of Scholasticism and Monasticism; the reforms of Luther, Zwingle, Calvin, and Henry VIII.; Catholic Reaction, Inquisition, Loyola, Council of Trent; Philip II. and the Counter Reformation in France, the Netherlands, and England. — Lectures and theses	2	4 Gr., 23 Se., 9 Ju., 6 So., 4 Sp., 2 Di.	48
Mr. Bendelari	11. European History during the Seventeenth Century and the first half of the Eighteenth	3	2 Gr., 22 Se., 15 Ju., 14 So., 3 Fr., 6 Sp., 1 Sc.	63
Profs. Macvane and Channing	12. European History from the Middle of the Eighteenth Century. — Lectures and collateral reading. — Two short theses	3	4 Gr., 24 Se., 43 Ju., 38 So., 1 Fr., 10 Sp., 1 Sc.	121

	reading, and studies of original sources		So., Fr., Sp.	
Prof. Hart	18. Constitutional and Political History of the United States (1783–1861). — Lectures, with collateral reading. — Five or six special reports were required from each student. Each report necessitated from three to twelve hours of research in the Library, under the direction of an assistant	3	5 Gr., 58 Se., 44 Ju., 25 So., 1 Fr., 7 Sp., 1 Sc., 1 Law	142
Prof. Hart	17. General History of the United States. — Lectures, with collateral reading. — Three special reports, each necessitating from four to ten hours of research in the Library, under the direction of an assistant, were required of each student	3 2d half-year	8 Se., 20 Ju., 36 So., 21 Fr., 21 Sp., 3 Sc., 1 Law	110
Profs. Macvane and Hart	*14. Constitutional Government (advanced course). — Lectures. — Reports by the students of results of their investigations	3	2 Gr., 7 Se.	9
Dr. Snow	*15. Elements of Public International Law (twice a week). — Hall's treatise on International law. — Discussion of cases from Law Reports and other sources. — History of Treaties (once a week). — Study of important Treaties and of the General History of Diplomacy in Europe and America since 1783	3	1 Gr., 52 Se., 7 Ju., 1 So., 2 Sp.	63
Prof. Everett	*16. Studies in the Comparative History of Religions, particularly the Vedic religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese religions. — Lectures	2	3 Se., 1 Ju., 18 Di.	22

COURSES OF INSTRUCTION. — CONTINUED.

	*20. Special Advanced Study and Research:			
Dr. Gross	(*b*) Topics in Mediaeval Municipal History. The work consisted of: (1) lectures on municipal history; (2) an elaborate thesis by each student on a topic connected with municipal history; (3) topics investigated by the students collectively under the guidance of the Instructor	2	2 Gr., 1 Se.	3
Prof. Macvane	(*c*) The Social Condition of Europe in the Eighteenth Century. The work consisted wholly of investigation by the students of topics selected at the beginning of the year. There were no meetings of the students as a class. Each student conferred individually with the Instructor regarding the progress of his work, and embodied the results of his studies in a thesis at the end of the year		1 Gr., 2 Se.	3
Prof. Hart	(*d*) Topics in American History. — Preparation of elaborate theses. — Each student had a half-hour of conference with the Instructor weekly. Each thesis included an appendix of illustrative documents and a discussion of the whole subject		4 Gr., 5 Se., 3 Law	12
Prof. Channing	(*e*) Topics in American History and in Modern Diplomatic History. The topics selected were: (1) the political organization of the American Revolution; (2) the Eastern Question, 1856–1889. — Lectures by the students twice a week from November to April		3 Gr., 9 Se., 1 Ju.	13
Dr. Snow	(*f*) History of Diplomacy since 1815. Study of the chief diplomatic events of Europe and America from the original sources. — Reports (written or oral) upon special topics or periods presented and discussed	2	4 Se.	4

	ROMAN LAW.			
Mr. Schofield	1. History and Institutes of Roman Law	3	1 Gr., 15 Se., 4 Ju., 2 So., 1 Fr., 1 Sp.	24
	[2. Advanced study of special topics		Omitted in 1889–90.	
	FINE ARTS.			
Mr. Moore	1. Principles of Delineation, Color, and Chiaroscuro. — Lectures (once a week), with collateral reading: Ruskin's Modern Painters (selections from Vols. I., III., IV., V.) and Elements of Drawing; Sir Joshua Reynolds' Eleventh Discourse; Longfellow's Abstract of Lectures on Perspective. — Practice in Drawing and in the use of Water-colors (four to six hours). — Perspective		6 Se., 18 Ju., 13 So., 8 Fr., 4 Sp., 5 Sc.	54
Mr. Moore	2. Principles of Design in Painting, Sculpture, and Architecture. — Lectures (once a week), with collateral reading: selections from Perrot and Chipiez's and Reber's histories of Ancient Art; Viollet-le-Duc's Dictionnaire Raisonné de l'Architecture française; Chateau's Histoire et Caractères de l'Architecture en France. — Practice in Drawing and Water-colors (two to four hours)		3 Se., 2 Ju., 2 So., 4 Sp.	11
Prof. Norton	[3. Ancient Art	3	Omitted in 1889–90.	
Prof. Norton	4. Roman and Mediaeval Art. — Lectures on the arts as illustrating the moral, intellectual, and social conditions of the period treated of; the influence of the tradition of the ancient arts on those of the Middle Ages; the intellectual revival of the 12th century; the rise and development of Gothic architecture; the arts of the early Renaissance, etc.	3	6 Gr., 83 Se., 81 Ju., 42 So., 5 Fr., 20 Sp., 3 Sc.	240
Prof. Norton	*8. Literature and the Fine Arts in Italy during the Middle Ages and the Renaissance, with special study of Dante. — In Course 8 a knowledge of Italian is required	3	2 Gr., 8 Se., 1 Ju.	11

COURSES OF INSTRUCTION. — CONTINUED.

	MUSIC.			
Prof. Paine	1. Harmony. —Jadassohn's Harmony. — Written exercises on figured basses and the harmonizations of given melodies, including chorals, played-over and corrected in the class-room	3	3 Se., 2 Ju., 3 So., 10 Fr., 4 Sp.	22
Prof. Paine	2. Counterpoint. — Jadassohn's Counterpoint. — Written exercises and compositions in the various orders of strict Counterpoint, in two, three, and four voices, with *cantus firmus*. — Double Counterpoint. — Free Imitative Counterpoint. —Inventions in two voices. — Choral harmonizations. — Organ preludes in three and four voices. — Songs and Part-songs were also composed by the students	2	1 Se., 6 So., 3 Sp.	10
Prof. Paine	3. History of Music, with analysis of the works of the great masters. — Lectures. — Written descriptions of the orchestral scores and biographical and critical sketches of the great composers were required of the students	1 or 2	2 Se., 4 Ju., 8 So., 3 Sp.	17
Prof. Paine	[*7. Instrumentation	1	Omitted in 1889–90.	
Prof. Paine	[*5. Canon and Fugue	2	Omitted in 1889–90.	
Prof. Paine	*6. Free Thematic Music. —Original compositions in free form (nocturnes, rondos, minuets, marches, etc.). — Canons in two and three voices, in similar and contrary movement. — Fugues in two or three voices. — Bussler's Musical Form. — Jadassohn's Canon and Fugue	2	1 Gr., 3 Ju., 1 Sp.	5
	MATHEMATICS.			
Prof. C. J. White	*A*. Logarithms. —Plane Trigonometry, with some of its applications to Surveying and Navigation. — Wheeler's Logarithms. — Peirce's Mathematical Tables. — Wheeler's Plane Trigonometry. — Problems in Plane Trigonometry	3 1st half-year	4 Se., 8 Ju., 20 So., 79 Fr., 14 Sp., 17 Sc. (Two sections)	142

Prof. C. J. White	*B.* Analytic Geometry (elementary course). — Briggs's Analytic Geometry	3 2d half-year	2 Se., 7 Ju., 14 So., 46 Fr., 6 Sp., 7 Sc. (Two sections)	82
Mr. Anderegg	*C.* Analytic Geometry (extended course). — Lectures	3	1 Gr., 5 So., 15 Fr., 2 Sp., 2 Sc.	25
Mr. Sawin, Dr. Markley, and Mr. Bailey	*D.* Algebra. — Wentworth's College Algebra (Chapters 9–18, 21, 22, and part of Chapter 29). — Lectures and recitations *Advanced Section:* Wentworth's College Algebra (Chapters 10–18, 21, 22, 29, 30). — Lectures and recitations	3 1st half-year	6 Se., 13 Ju., 18 So., 45 Fr., 16 Sp., 8 Sc. (Four sections)	106
Dr. Markley and Mr. Bailey	*E.* Solid Geometry. — Chauvenet's Geometry (Books VI.–IX.). — Wentworth and Hill's Exercises. — Lectures and recitations	3 2d half-year	9 Se., 15 Ju., 17 So., 37 Fr., 10 Sp., 10 Sc. (Two sections)	98
Prof. C. J. White	[1. Practical Applications of Plane Trigonometry. — Applications of Plane Trigonometry to Astronomy and Navigation	2	Omitted in 1889–90.	
Prof. Byerly	2. Differential and Integral Calculus (First Course). — Byerly's Differential Calculus. — Lectures	3	1 Gr., 1 Se., 9 Ju., 28 So., 5 Fr., 2 Sp., 3 Sc.	49
Prof. Byerly	3. Analytic Geometry (higher course)	3	3 Gr., 4 Se., 1 Ju., 6 So., 1 Sc.	15
Mr. Sawin, Prof. B. O. Peirce, and Mr. Roe	4. The Elements of Mechanics. — The Statics of Rigid Bodies treated Analytically. — The Elements of Graphical Statics. — The Dynamics of a Particle. — Lectures	3	2 Gr., 1 Se., 7 Ju., 1 So., 1 Sp., 1 Sc.	13
Prof. Byerly	12. The Theory of Differential Equations. — A course of reading under the direction of the Instructor. — (The plan of this course was changed owing to the death of Mr. Sawin)		1 Sc.	1

COURSES OF INSTRUCTION. — CONTINUED.

Prof. C. J. White	5. Differential and Integral Calculus (Second Course). — Byerly's Integral Calculus (Methods of Integration; Determination of lengths of curves, areas, volumes, centres of gravity moments of inertia; Definite integrals; Elliptic integrals and functions; Mean value and probability; Introduction to the theory of functions; Differential equations)	3	4 Gr., 5 Se., 6 Ju., 1 So., 1 Sc.	17
Dr. Markley	6. Quaternions and Theoretical Mechanics. — Lectures on Composition of Vectors; Elementary Principles of Quaternions; Differentiation of Quaternion Functions; Geometry of the Right Line, Circle, Sphere, and Cyclic Cone; Theory of the Linear Vector Function; Elements of Theory of Tortuous Curves and Dynamics of a Particle	3	5 Gr., 5 Se., 3 Ju.	13
Prof J. M. Peirce	[7. Higher Plane Curves		Omitted in 1889–90.	
Mr. Sawin and Mr. Bailey	14. Higher Algebra. — Theory of the general Cubic and Biquadratic; Symmetric Functions; Resultants; Determinants; Invariants and Covariants of the Cubic, Quartic, and Quintic; The general Invariant Theory. — Lectures	3	1 Gr., 2 Se.	3
Prof. Byerly	[8. Analytic Mechanics	3	Omitted in 1889–90.	
Prof. J. M. Peirce	[9. Quaternions and Theoretical Mechanics (Second Course)	3	Omitted in 1889–90.	
Prof. Byerly	10. Trigonometric Series. — Introduction to Spherical Harmonics. — Lectures	2	5 Gr., 2 Se.	7
Prof. B. O. Peirce	11. Hydrostatics. — Hydrokinematics. — Force Functions and Velocity Potential Functions and their uses. — The Application of the Newtonian Potential Function to the solution of Problems in Electrostatics and Electrokinematics. — Lectures	3	6 Gr., 2 Se.	8
Prof. B. O. Peirce	[15. Wave Motion	3	Omitted in 1889–90.	

Prof. Byerly	16. Problems in the Mechanics of Rigid Bodies. — Routh's Rigid Dynamics. — Lectures	2	4 Gr., 1 Se.	5
Prof. J. M. Peirce	[13. The Theory of Functions	3	Omitted in 1889–90.	
	20. Special Advanced Study and Research:			
Prof. C. J. White	(*a*) Gauss's Theoria Motus Corporum Coelestium		Omitted in 1889–90.	
Prof. Byerly	(*b*) Bessel's and Lamé's Function and their use in problems in Physics. — Theses	1	2 Gr.	2
Mr. Sawin	(*c*) Higher Algebra (second course)		Omitted in 1889–90.	
	PHYSICS.			
Profs. Trowbridge, B. O. Peirce, and Hall	*A.* Introductory Lectures (Prescribed for Freshmen)	1 2d half-year		
Prof. Hall	*B.* Experimental Physics. — A course of experiments following the Descriptive List of Elementary Physical Experiments issued by the College, omitting about one fourth of the exercises. — Lectures (once a week) and Laboratory work (two hours a week)	3	1 Gr., 10 Se., 14 Ju., 18 So., 27 Fr., 14 Sp., 9 Sc.	93
Prof. B. O. Peirce	*C.* Experimental Physics. — Measurements in Mechanics, Sound, Heat, Light, Electricity, and Magnetism. — Lectures and Laboratory work (together, six hours a week)		6 Se., 4 Ju., 9 So., 15 Fr., 3 Sp., 17 Sc.	54
Prof. Hall	1. General Descriptive Physics. — Everett's Deschanel's Natural Philosophy (omitting some of the more difficult portions and nearly the whole treatment of Static Electricity). — Lectures and recitations (twice a week). — Laboratory work (two hours a week)		1 Gr., 4 Se., 5 Ju., 4 So., 7 Fr., 3 Sp., 9 Sc.	33
Prof. B. O. Peirce	3. Electrostatics, Electrokinematics, and parts of Electromagnetism. — Lectures (once a week) and Laboratory work (six to eight hours a week)		1 Gr., 2 Se., 2 Ju., 9 So., 2 Sp., 2 Sc.	18
Prof. Trowbridge	4. Electromagnetism. — Fleming's treatise on Induction. — Lectures (twice a week). — Laboratory work (six hours a week) based upon topics treated in the text-book		2 Se., 2 Ju., 4 So., 2 Sp., 2 Sc.	12

COURSES OF INSTRUCTION.—CONTINUED.

Prof. Trowbridge	5. Light.—A general treatment of Optical Phenomena		Omitted in 1889–90.	
Prof. B. O. Peirce	6. Thermodynamics	2	3 Se., 1 Ju., 1 Sc.	5
Prof. Hall	7. Dynamos: the theory of their action and the principles of their economical operation, with practice in managing and testing them.—Thompson's Dynamo-Electric Machinery to Chap. XXIII. (omitting much of the detailed description of particular machines).—Lectures (twice a week) and Laboratory work (five hours a week)	1st half-year	1 Se., 2 Ju., 1 So., 1 Sp., 2 Sc.	7
Prof. Hall	10. Heat Engines: the theory of their action and the principles of their economical operation, with practice in managing and testing them.—Peabody's Thermodynamics of the Steam-Engine and Tables of the Properties of Saturated Steam and Other Vapors.—Lectures (twice a week).—Laboratory work (five hours a week) mainly devoted to a study of the mechanism of an ordinary 25 h. p. Kendall & Roberts steam-engine and of its performance with and without a condenser	2d half-year	3 Se., 1 Sc.	4
Prof. B. O. Peirce	*8. The Mathematical Theory of Electrostatics and Electrokinematics		Omitted in 1889–90.	
Prof. Hall	[*9. The Mathematical Theory of Electrodynamics and Electromagnetism		Omitted in 1889–90.	
	*20. Special Advanced Study and Research:			
Prof. Trowbridge	(*a*) Electrical Oscillations.—Spectrum Analysis.—Ultra violet spectra.—Laboratory (three or four hours a day)		1 Gr.	1
Prof. B. O. Peirce	(*b*) Electrostatic Measurements.—Subject for the year: the Use of Paraffine as a Dielectric in Condensers.—Laboratory work (twenty hours a week).—The results of the work are to be published in the Proceedings of the American Academy of Arts and Sciences		1 Se.	1
Dr. Whiting	(*c*) [Sound and Elasticity		Omitted in 1889–90.	
Prof. Hall	(*d*) Electromagnetism		Omitted in 1889–90.	

CHEMISTRY.

Prof. Cooke	*A.* Elementary Chemistry (Prescribed for Freshmen). — Lectures	1 1st half-year	1 Se., 1 Ju., 6 So., 301 Fr., 39 Sp., 8 Sc.	356
Prof. Cooke and Dr. Huntington	*B.* Experimental Chemistry. — Lectures (once a week). — Laboratory work (three, or if taken as a full course, six hours a week)		2 Se., 3 Ju., 7 So., 24 Fr., 4 Sp., 4 Sc.	44
Dr. Huntington	*C.* Mineralogy of common rocks and metallic ores, including blow-pipe assaying and the simpler methods of furnace assaying of silver and gold ores. — Lectures (three hours a week). — Laboratory work		3 Se., 1 Ju., 2 So., 1 Sp., 1 Sc.	8
Prof. Jackson	1. Descriptive Inorganic Chemistry. — Study of the elements and their most important compounds, including a sketch of technological chemistry. — Lectures (twice a week), and either laboratory work (four hours), or recitations (once) and laboratory work (two hours)		3 Gr., 8 Se., 21 Ju., 30 So., 9 Fr., 8 Sp., 17 Sc. (Two sections)	96
Dr. Huntington	2. Determinative Mineralogy. — Lectures (three times a week) in the Mineral Cabinet and practical exercises		3 Gr., 14 Se., 4 Ju., 7 So., 4 Fr., 2 Sp., 9 Sc.	43
Prof. H. B. Hill	3. Qualitative Analysis (chiefly laboratory work). — Lectures (about twenty during the year). — Laboratory work (nine or more hours a week)		1 Gr., 12 Se., 13 Ju., 5 So., 3 Fr., 3 Sp., 1 Sc.	38
Profs. Cooke and H. B. Hill, and Dr. Richards	4. Quantitative Analysis (chiefly laboratory work). — Lectures (about twenty during the year). — Laboratory work (nine or more hours a week)		1 Gr., 8 Se., 5 Ju., 2 Sp., 2 Sc.	18
Profs. Cooke and H. B. Hill, and Dr. Richards	4*a*. Quantitative Analysis (second course). — Laboratory work, with occasional lectures		1 Gr., 4 Se., 1 Ju., 1 Sp.	7
Prof. H. B. Hill	5. The Carbon Compounds. — Lectures (three times a week) and laboratory work (three to six hours or more a week)		3 Gr., 7 Se., 1 Ju.	11

COURSES OF INSTRUCTION. — CONTINUED.

Prof. Cooke	*6. Advanced Problems in Inorganic Chemistry, including Molecular Weights and Volumes, Thermo-Chemistry, and Specific Refractive Power. — Lectures (three times a week). — Laboratory work (averaging six hours a week)		2 Gr., 2 Se.	4
Prof. Cooke	[*7. Crystallography and the Physics of Crystals. — Lectures and practical exercises		Omitted in 1889–90.	
	*20. Special Advanced Study and Research:			
Prof. Cooke	(*a*) Determination of Atomic Weights. — Laboratory work (averaging more than nine hours a week)		1 Se.	1
Prof. Jackson	(*b*) Aromatic Compounds		Omitted in 1889–90.	
Prof. H. B. Hill	(*c*) Organic Chemistry. — Original investigation in the laboratory (ten hours a week and upwards)		1 Gr., 2 Se.	3
Prof. Jackson	(*d*) Inorganic Chemistry		Omitted in 1889–90.	
	NATURAL HISTORY.			
	BIOLOGY.			
Prof. Mark	2. Zoölogy. — Lectures (two or three a week) giving a general survey of the animal kingdom, with an outline of human physiology, and treating of certain general questions. — Laboratory work (three hours a week)	1st half-year	10 Se., 11 Ju., 18 So., 26 Fr., 6 Sp., 8 Sc.	79
Prof. Goodale	3. Botany. — Lectures (two and occasionally three a week) on the General Morphology and Development, and the Physiology of Flowering Plants. — Laboratory work (three or four hours a week for seven weeks)	2d half-year	19 Se., 19 Ju., 41 So., 40 Fr., 20 Sp., 11 Sc.	150

Prof. Farlow and Mr. G. H. Parker	5. Biology. — Study of types of plants and animals. — Lectures (three times a week). — Laboratory work (six hours a week)		2 Gr., 11 Se., 13 Ju., 14 So., 3 Sp., 3 Sc.	46
Mr. G. H. Parker	6. Zoölogy (second course). — Lectures (twice a week) on the Comparative Anatomy of Vertebrates. — Laboratory work (six to ten hours a week): dissection of typical Vertebrates: shark, bony fish, salamander, pigeon, and cat. The record of this work in the form of drawings and notes was kept by the student in a laboratory note-book		3 Gr., 11 Se., 3 Ju., 1 Sc.	18
Prof. Goodale	7. Botany (second course). — Review of the Morphology of Flowering Plants. — Vegetable Histology. — Laboratory work (five hours a week). — Lectures on Economic and on Physiological Botany. — During the second half-year, each student took two problems, one in Economic and one in Physiological Botany, on each of which a report, in the form of a thesis, was presented		2 Gr., 5 Se., 1 Ju., 1 So., 2 Fr., 1 Sp., 4 Sc.	16
Prof. Farlow	*23. Cryptogamic Botany. — Study of structure and development of the orders of Cryptogams. The course is designed for persons intending to become physicians or naturalists. — Lectures (twice a week) and laboratory work (six to eight hours a week)	2d half-year	1 Gr., 8 Se., 1 Ju., 1 Sc.	11
Prof. Mark	*13. Microscopic Anatomy. — Lectures (three times a week) on methods of microscopic study, and on the anatomy and histology of Hydra, Asteracanthion, Taenia, and Lumbricus. — Laboratory work (six to eight hours a week) on the same animals	1st half-year	1 Gr., 6 Se., 1 Sc.	8
Prof. Shaler	*14. Palaeontology. — Lectures (twice or three times a week). — Laboratory work (six hours) and a thesis		3 Gr., 5 Se., 1 Ju., 3 Sc.	12
Dr. Slade	*21. Comparative Osteology. — Lectures (once or twice a week). — Laboratory work (three hours a week)		2 Gr., 2 Se., 3 Sp.	7

COURSES OF INSTRUCTION.—CONTINUED.

	COURSES FOR SPECIAL RESEARCH.			
Prof. Mark	*9. Embryology. — Investigation of special subjects, the results of each presented in a thesis		7 Gr., 1 Se.	8
Prof. Hagen	*10. General Entomology		Omitted in 1889-90.	
Prof. Goodale	*11. Experimental Vegetable Physiology.—Systematic and Economic Botany. — Study of special topics. — Laboratory work (six hours and upwards a week)		1 So., 1 Sp., 1 Sc.	3
Prof. Farlow	*12. Structure and Development of Cryptogams. — Special research in the laboratory by graduates and advanced students		2 Gr., 1 Sp., 1 Sc.	4
Prof. Shaler	*17. Palaeontology (second course). — Laboratory work. — Theses		1 Gr.	1
	GEOLOGY.			
Prof. Davis	1. Physical Geography and Meteorology (elementary course). — Lectures (twice a week) and recitations in three sections (one hour each). — Laboratory work is assigned, but no regular hours are devoted to it by Instructor		13 Se., 13 Ju., 15 So., 22 Fr., 5 Sp., 8 Sc.	76
Prof. Davis	*20. Physical Geography and Meteorology (second course). — Lectures, individual conferences (once a week), and reports requiring six to eight hours a week of library work		2 Gr., 1 Se.	3
Prof. Shaler	4. Geology. — Lectures (twice a week). — Dana's Manual of Geology		5 Se., 17 Ju., 32 So., 65 Fr., 19 Sp., 11 Sc.	149

Mr. Harris	4*a*. Geology. — Two exercises (four hours) a week in the laboratory with geological models, maps, specimens, etc., until the spring recess; after the spring recess, six field exercises. — Occasional lectures		1 Gr., 11 Se., 5 Ju., 11 So., 19 Fr., 12 Sp., 7 Sc.	66
Profs. Shaler and Davis, and Dr. Wolff	*8. Geology (second course). — Lectures (two or three a week). — Lyell's Principles of Geology. — Field-work in the fall and spring		1 Gr., 16 Se., 11 Ju., 12 So., 3 Sp., 7 Sc.	50
Prof. Shaler	*15. Historical Geology. — Laboratory work (nine hours a week). — Field-work (six weeks in summer)		1 Sc.	1
Profs. Shaler and Davis, Dr. Wolff, and Mr. Harris	*16. Geological Field-work, for training in the principles of Geological Surveying. — Field-work (six weeks in summer). — Reports. — Theses. — Attendance at weekly conference meetings required		1 Gr., 1 Se., 4 Sc.	6
Prof. Whitney	*18. Economical Geology. — Lectures	4 2d half-year	2 Gr., 4 Se., 2 So., 1 Fr., 1 Sp., 3 Sc.	13
Dr. Wolff	22. Petrography. — Laboratory work (ten to eighteen hours a week devoted to special investigations)		2 Gr.	2
Prof. Whitney	[*25. Mineral Veins and Metalliferous Deposits	1	Omitted in 1889–90.	

group lacking: in Italian and Spanish, owing to the small number of courses in each, and in History, where a peculiar and interesting provision was devised for graduate students. The instruction in this department designed for undergraduates, consisting of three introductory and nine more advanced courses, and aggregating from twenty-nine to thirty-three hours a week, covers substantially the same ground, with some change of detail, as heretofore. The instruction provided for graduates consists, in the first place, of nine courses which deal with the same subjects as the nine more advanced undergraduate courses, and are designed for graduates who wish to carry on the general subject of history. The student in one of these courses is at liberty to attend the lectures in the corresponding undergraduate course, or he may secure the knowledge there imparted by private study. The special provision made for him is the opportunity for conference at stated times with the instructors, who aim to give him such counsel and guidance as may be adapted to his maturity of mind and seriousness of purpose, particularly in reference to the study of sources. The subjects of these nine courses are: early mediaeval institutions; constitutional history of England to the Tudor period; history of the government and institutions of France to the reign of Louis XIV.; general church history; constitutional history of England from the Tudor period to the accession of George I.; history of American institutions to 1783; constitutional development of the United States; history of continental Europe (chiefly France and Germany) since the Seven Years' War; constitutional history of England since the accession of George I. To these are added three more courses for graduates: on federal government (historical and comparative); on the leading principles of constitutional law; on the historical development of international law.

Parallel with this classification of courses according to the grade of the students for whom they are adapted, and partly coinciding with it, there are found in many departments other subdivisions, based on the character of the subject or on the method of instruction. The development of the higher instruction in many departments had proceeded so far that the Faculty deemed it advisable to agree upon a uniform nomenclature to designate the new features. Most prominent among these are the 'Courses of Research,' under which the Faculty directed that each department should group those of its courses in which the primary object is training in research. These courses naturally require, as a rule, the maturity of a graduate, but are sometimes taken by undergraduates of marked proficiency. The plan provides stated meetings with the instructor, but the distinguishing feature of these courses is the independent work of the student in some line of research, the results of which he is expected to present in written form. The practice of conducting such courses has gradually extended until they are now found in Sanskrit, Classical Philology, English, German, French, Romance Philology, Philosophy, Political Economy, History, Fine Arts, Mathematics, Physics, Chemistry, Botany, Zoölogy, and Geology. The subjects or fields of investigation are in some cases left to be arranged by the student with his instructor, but in some departments they are announced by the several instructors in advance. In some cases the student pursues his own topic independently, in others a number of students work together in the same field or study closely related topics, and the method pursued is that of the 'Seminary.'

This word has also obtained a footing among us, and is now defined by the Faculty as applicable in our announcements to courses organized, on the recommendation of a department, for training in research, with stated meetings at which the students present for criticism and discussion the results of their studies. Thus the six 'Courses of Research' in History are called Seminaries, the fields of investigation being as follows: church and state in the Middle Ages; local government during the Middle Ages, especially in Great Britain; English history in the period of the Long Parliament; studies in the history of England and France, 1775 to 1800; studies in American history; the history of American diplomacy.

The oldest and most fully organized seminary is that in Classical Philology, which is under the charge of two directors chosen by the instructors in the department. The meetings, which occur twice a week, each session occupying an hour and a half, are ordinarily devoted to the text-criticism and interpretation of a Greek and a Latin author. Each member of the Seminary is further expected to investigate, in the course of the year, some question in Classical Philology, under the guidance of one of the instructors in the department; and the results of his investigation, embodied in a thesis, are discussed at a public meeting of the seminary, at which all instructors and students of the classics are invited to be present.

Another outgrowth of our system of instruction is the 'Conference,' which is the term applied to a series of meetings of instructors and students in a department for the discussion of papers and topics of common interest, the work in which does not count for any degree. These useful institutions are regularly established in the following departments: Semitic, Sanskrit, Modern Languages, Philosophy, History, Geology. The proceedings at these meetings are more or less informal and social, serving to bring instructors and students into more familiar contact, to the manifest advantage of both. The same end is served in other departments by societies and clubs which do not appear in our Announcement, but whose work is quite as beneficial as that of the 'Conferences.' These are the Classical Club, the English Club, the Deutscher Verein, the Conférence Française, the Philosophical Club, the Natural History Society.

Some of the changes of detail in certain departments deserve to be noticed. The courses in biology were divided and placed under the separate heads of Botany and Zoölogy. In Greek an advanced course for Freshmen was introduced, corresponding to the similar course which has been conducted for some years in Latin. The German department, with the consent of the Faculty, tried the experiment of establishing, alongside of the present elementary course of three hours a week (German *A*), another of five hours, in which they hope, by the greater concentration of the students' work, to accomplish substantially as much in one year as is now done, in Courses *A* and 1, in three hours a week for two years, or at least to equal the attainments of those whose study of the language at school is supplemented by one course in College. The inferiority of the ordinary school training in German to that imparted in German *A* led the department to institute a special course for those who have passed the admission examination in elementary German, in the hope that by placing them in a class by themselves and giving them separate attention, they may bring them, by the end of the year, up to the standard of those who have had the advantage of the College training from the beginning. In French an additional course for second-year students, parallel to French 1, was introduced, designed for those who do not propose to carry their study of the language beyond that year.

The list of prescribed studies was modified by the omission of English *D* and Physics *A*. The omission of the former (the Senior course in forensics) was balanced by two important compensations. The Junior and Senior forensic courses have been the subject of a series of experiments in recent years, and in their latest phase demanded considerably more work of the student than the former simple requirement of four forensics each year. The additions consisted of a brief before each forensic and a course of lectures on argumentative composition, and although attendance on the lectures was not compulsory, they could not be neglected by a conscientious student. The new arrangement omits the Senior course and enlarges the Junior course so that it now embraces, besides the lectures, the preparation of a brief based on some masterpiece of argumentative composition, and five forensics, each preceded by a brief. The work of the course, as thus constituted, may be fairly estimated to be about double that of the old requirement of four forensics. Furthermore, the loss of the Senior forensics is more than made good for those who wish to continue their practice in argumentative writing by the establishment of an elective half-course, in which the work consists of eight briefs and forensics, with lectures, conferences, and discussions.

The omission of Physics *A*, a course of about twelve weekly lectures in the second half-year, from the list of prescribed studies, does not dispense with the instruction given, but merely exempts the Freshmen class from the examination hitherto held at the end of the year. The course now takes its place among the introductory courses which have already become a feature of several departments. In Greek such a course has been provided for Freshmen for two years past. The German department had a similar course last year. This year, introductory (evening) lectures are given in the departments of Philosophy and Romance Philology. Such courses may be made to serve a very useful purpose by enabling a student to get some notion of the nature and scope of a subject and of its value to him for mental training or future use, before committing himself to the study of it.

The following new courses, in addition to those already referred to, deserve mention: —

Political and literary history of the Bagdad Califate. *One hour.* Professor TOY.

The tragedies of Aeschylus. *Three hours.* Professor GOODWIN.

The Athenian expedition to Sicily in 415–413 B.C., studied in connection with the sixth and seventh books of Thucydides. *Two hours, second half-year.* Professor GOODWIN.

Study of selected topics in the private life of the Greeks. *Two hours.* Professor J. W. WHITE.

Roman archaeology (architecture and engineering; topography and architectural history of the city of Rome). *Two hours.* Dr. TARBELL.

General history of German literature. *Three hours.* Professor FRANCKE.

Germanic mythology. *Three hours, first half-year.* Professor KITTREDGE.

Middle High German. *One hour.* Professor VON JAGEMANN.

French grammar. Critical study of modern texts. *Two or three hours.* Professor COHN.

The psychological basis of religious faith. *One hour.* Professor EVERETT.

The content of Christian faith. *Three hours.* Professor EVERETT.

Contemporary systems. The philosophy of Lotze. *Three hours.* Dr. SANTAYANA.

Finite differences; theory of numbers; calculus of variations; curvature of surfaces. (Lectures by the students.) *One hour.* Professors J. M. PEIRCE, B. O. PEIRCE, and BYERLY.

Mineralogy of common rocks. Metallic ores, with blow-pipe assaying and the simpler methods of furnace assaying. *Two hours and laboratory work.* Dr. HUNTINGTON.

Anatomy and development of animals (course of research). Professor MARK.

Structural and dynamical geology. *Two hours.* Mr. HARRIS.

Petrography (course of research). Dr. WOLFF.

But no statement of details can give an adequate idea of the whole body of instruction now offered in arts and sciences. To obtain this, it is necessary to study the Announcement itself and the numerous departmental descriptive pamphlets. The useful practice begun in 1880 by the geological department, of publishing in a separate pamphlet a description of its resources and its methods of instruction, has been so widely followed that this year all but four departments are thus provided. The object of these pamphlets is two-fold: first, to give to our own students fuller information than is possible within the necessary limits of the general Announcement, and such advice as will assist them in laying out an intelligent plan of study; secondly, to make known to them and to students in other colleges the opportunities offered here for advanced study and research. To any one who desires to inform himself on the present resources of the University for teaching in the various fields of liberal learning, these pamphlets are the best guide.

Any one who will compare with former Announcements the Announcement for the present year, as elucidated by the descriptive pamphlets, will see clearly that much progress has been made by the attention which the Faculty gave to the subject last spring. The improvement has not been for the benefit of any particular class or grade of students. I have dwelt at some length on the better organization of the higher instruction, which naturally claimed a large share of the Faculty's attention in view of the prospective organization of the Graduate School; but these pamphlets give evidence also of a careful study, based on actual experience, of the needs of the undergraduate. I have already mentioned the establishment of an advanced course for Freshmen in Greek; the careful adjustment of the elementary courses in German to the various conditions which that department finds it has to deal with; the addition of a parallel course in second-year French; the better arrangement of forensic work; the introductory lectures. But here again no statement of details can do justice to the subject. The reader of the Announcement will see that more than one department has studied its whole scheme of instruction anew and effected a better organization of its courses. Particular attention may be called to the provision made for the study of French literature of all periods, and to the better grouping of the German courses. Especially worthy of notice are the improved scheme and the rich resources of the philosophical department. Besides the introductory lectures already mentioned, which treat in brief outline of representative men and issues of modern philosophy, there is a formal introductory course of three hours a week through the year, in which three instructors unite in teaching the elements of logic, psychology, and metaphysics, as a basis for the study of the 'systematic' and 'historical' courses which follow. Under the former head, instruction to the extent of eleven hours a week is offered in psychology, cosmology, ethics, the philosophy of religion, and the psychological basis of religious faith. Under the head of 'Historical Courses' are included seven courses with from twenty-three to twenty-four hours a week of instruction, treating of the comparative history of religions, Greek philosophy, Descartes, Spinoza, and Leibnitz, English philosophy, German philosophy from 1770 to 1830, the philosophy of Lotze, the ethics of current social questions, the content of the Christian faith. With one exception all of these courses are offered for the present year. Next in this classified list come the Courses of Research, under which head Professors Palmer, James, and Royce announce seminaries in ethics, psychology, and metaphysics, respectively, and Professor Palmer further offers aid and guidance to advanced students who wish to pursue individual investigations of questions in ethics. Finally, the department holds a 'Conference' twice a month at the house of one of the instructors, 'for friendly intercourse and informal discussion of philosophical subjects.'

This sketch of the scheme of instruction in philosophy may serve to illustrate the tendency of the movement which is going on in our whole system of instruction. The history of the elective system has been the history of a transition from instruction organized by years of the college course to instruction organized by departments of study. In the great question of the new organization of the Graduate School, the controlling fact was the solidarity of the department; and it is this fact that points out the way of our future growth. Just now it is the higher instruction that needs especially to be fostered; but no part can be strengthened without adding strength to the rest. For the development of many of the departments there is now great need of a fuller equipment of material resources, in the way of lecture and recitation rooms; of maps, photographs, casts, and other illustrative apparatus; of publication funds; above all, of working departmental libraries and rooms for reading and study. The adequate equipment of some departments will only be attained when they are housed in buildings of their own, as the departments of physical and natural science are housed to-day. It is gratifying to record that two important steps in this direction have recently been taken. Within a few years past a number of departments have formed small 'class-room libraries' for the use of their students, ranging from two dozen to about seven hundred volumes each. The generosity of certain friends of the College has now enabled the classical and historical departments to procure departmental libraries of a few thousand volumes each, and accommodation for these has been provided on the first floor of Harvard Hall. The west lecture room on the same floor is to be fitted up for the use of the classical and other literary departments, which have heretofore been without adequate accommodation in this particular.

The whole number of elective courses of instruction offered for the present year was two hundred and fifty-five, of which one hundred and forty-six are rated as full courses and eighty-one as half-courses; one is rated as equivalent to two courses, one to a course and a half; and twenty-six courses of research, though usually taken as full courses, may be estimated differently according to the amount and difficulty of the work required. Omitting the introductory lectures and the voluntary classes in Elocution, the whole body of instruction offered for the present year is equivalent to two hundred and nineteen and a half full courses. The distribution of this aggregate among the several departments is shown in the following table, together with the corresponding statistics for each of the last seven years: —

AMOUNT (IN FULL COURSES) OF INSTRUCTION OFFERED IN	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.	1890–91.
Semitic	8	8	8	9	9	11	12
Sanskrit and Zend	4	4	4	4	2	4	4
Greek	15½	13¾	14¼	13½	13½	14	13
Latin	12	14¾	12¾	13½	13	12	10½
Classical Philology	3	2	1	2	1	1	6½
English	8½	8½	7½	10	11	10	12
German	8	7½	8	7	9	9	14
Germanic Philology	..	..	..	..	..	2	2
French	8½	9½	8	8	8	9	11½
Italian	3	3	3½	3	3	3	4
Spanish	3	3	3	3	3	3	3
Romance Philology	..	..	1½	2½	4½	4½	3½
Philosophy	9½	10	11½	11	9½	11½	15½
Political Economy	5½	6	7½	7½	6½	6½	7
History	13	11	14½	15½	18½	17½	17
Roman Law	1½	1½	1½	1	1	1	1
Fine Arts	2½	4	4	3½	3½	3½	4
Music	5½	5	5	4	3½	3½	3½
Mathematics	14½	15½	16½	16½	15	15	19½
Engineering	..	..	..	..	..	..	9
Physics	6½	7½	8½	10	12½	13	12
Chemistry	8	8	9½	12	11½	12½	15
Natural History	16	18	20	18½	20	19½	20
Total	156	160½	170	175	178½	186	219½

The question of the organization of the graduate department has been for some years past one of growing importance. The position of the department was peculiar. It had no faculty of its own. Its instruction was provided by the College Faculty. The work of its students, their examinations, and their degrees were formally under the supervision of the Academic Council, but were practically in charge of committees of that body, the membership of which was mainly made up from the College Faculty. The department had outgrown this provisional arrangement, and was at some disadvantage in its anomalous situation.

With this question was inseparably bound up another question — that of the proper adjustment of the College course to graduate and to professional studies. The growth of the graduate department in point of numbers has brought it up to the proportions of a college class of twenty years ago. A considerable part of the instruction now offered in arts and sciences is above the highest standard of twenty years ago, and above that of the average American college of to-day. The existence of this great body of advanced instruction, and the demand for it by a large and growing body of students, are the data of a problem which did not exist two decades ago, but which to-day presses for a solution. The traditional college system does not fit the new state of things. To lavish on a four years' course the wealth of instruction now provided — the instruction offered for 1890–91 amounts to a little more than twelve times the college work required for the degree — might seem almost like extravagance and waste. With the growth of this instruction the standard of the Bachelor's degree has advanced, pushed forward by increased requirements for admission, and improved in quality by the consequent better training of the undergraduate. But the advance on this line has been carried to its utmost limit, and indeed has gone so far as to give just ground for complaint that students are kept too long from their professional studies. The new conditions cannot be met by the old system. The course of liberal training is no longer a matter of four years, but of five, six, or seven years. It is no longer a course in which the baccalaureate is the ultimate goal, but one in which the baccalaureate is merely a first degree in arts; a station on the road to higher liberal studies, or a point of divergence to professional study; a stopping place only to that smaller number, a third or a quarter of the whole, whose tastes or necessities lead them to give up their studies at that stage for the active pursuit of a livelihood.

The immediate question, then, is of the proper adjustment of the college course to the graduate course and to the professional school. But the consideration of it necessarily takes a wider range, for the whole scheme of liberal education is involved. If the college course is no longer to be the final stage of liberal culture, we are at once brought face to face with some important questions. Is the traditional form of the college course well adapted to its new relations? Is four years the best period of a college course under the new conditions, in which it is obviously advantageous to foster the higher studies, not only for their own sake, but for the benefit of those less advanced? Is the high standard of the Bachelor's degree, to which it was pushed at a time when these higher studies were not contemplated, a hindrance to their development? Is it an infringement on the just claims of professional study? If the standard of the baccalaureate is undesirably high, how can it be most advantageously lowered — by reducing the requirements for admission, or by reducing the college course? If the latter, what amount of reduction is expedient, and in what form and under what conditions should it be made?

The question of reducing the course was brought before the College Faculty by the following vote of the Academic Council, communicated to the Faculty December 6, 1887: —

"*Voted*, that with a view to lower the average age at which Bachelors of Arts of Harvard College can enter the professional schools and the Graduate department, the College Faculty be requested to consider the expediency of a reduction of the college course."

In that and the following year the Faculty made an effort to take the subject up, but the pressure of other matters of more immediate moment made it impossible to give to it the time which its importance and its difficulty demanded; so that it was not till last year that the opportunity was given for its full consideration. The greater part of eighteen meetings of the Faculty, from November to March, was devoted to the subject. The various questions involved were thoroughly discussed, and there was developed, as was to be expected, a great diversity of views, so that when the propositions which were finally adopted took definite shape, some members refused to support them who were nevertheless in favor of reducing the standard of the degree. These propositions were communicated to the President and Fellows, by vote of the Faculty, March 25, as follows: —

The Faculty desires to modify its present regulations in accordance with the following propositions: —

1. That the requirements for the degree of Bachelor of Arts be expressed, under suitable regulations with regard to length of residence and distribution of work, in terms of courses of study satisfactorily accomplished.
2. That the number of courses required for the degree be sixteen.

3. That when a student enters College, there shall be placed to his credit, towards satisfying the foregoing requirement of sixteen courses, (1) any advanced studies on which he has passed in his admission examination beyond the number required for admission, and (2) any other College studies which he has anticipated.

4. That a student may be recommended for the degree of Bachelor of Arts in the middle, as well as at the end, of the academic year.

In case the measures here proposed should be adopted, it is the purpose of the Faculty to encourage the anticipation of college studies by students at the time of their admission, and to facilitate the attainment of the degree of Bachelor of Arts in less than four years.

The Faculty further proposes to advise parents and teachers that eighteen years is a suitable age for entering Harvard College.

In this statement the Faculty sought to submit to the governing boards the essential features of its plan, free from the complication of any subordinate details. If the plan thus presented in outline should be approved, it will be the duty of the Faculty to make 'suitable regulations as to length of residence and distribution of work,' which shall, on the one hand, suffer no student to misuse or fail to use his opportunities so long as he is in residence, and, on the other, guard against the accumulation of work by ambitious or impatient students beyond the amount which can be done thoroughly.

The first of the four numbered propositions is in no sense new. It states the existing practice and is included with the rest simply to complete the statement of the scheme. The third proposition is only so far new that it would make general a privilege which the Faculty has for many years offered to grant on individual petition. The regulation on the subject is as follows: —

A student who, besides passing a creditable examination for admission to the Freshman class, has anticipated Freshman studies, may, if he see fit, count them toward his degree in either of the following ways: —

(1) He may obtain permission to reduce, by the amount of the studies anticipated, the number of courses regularly required in the Senior year, or in the Senior and the Junior years, provided that the reduction shall not exceed one full course in either year. Such permission will be granted, however, only for the purpose of enabling him to devote the time thus gained to his remaining studies.

(2) If he has anticipated studies amounting to a substantial portion of the work of the Freshman year, and desires to fulfil the requirements for the degree in three years, he may apply to the Faculty for leave so to do, specifying in his application the manner in which he proposes to arrange his studies for that purpose. The Faculty will decide on such applications according to the circumstances of each case.

The fourth proposition is a new departure, but it is chiefly interesting as an appendage of the second, which contains the gist of the whole matter. The effect of this provision would be to place the requirement of college work for the degree about half-way between the regular work of the first three years under the present system (14.2 courses) and that of the whole four years (18.2 courses). It is evident at once that the arrangement proposed is an elastic one, and that under it the length of the college course would be not a fixed but an adjustable quantity, to be determined for each student by the conditions of his own case. These conditions vary widely. At the outset, there is a great difference among those who come to College together in the same class as to the amount and quality of their preparatory training. Some enter heavily conditioned; others not only come in clear of conditions, but have anticipated one or more college studies. Some are well trained and can work with speed and efficiency; others are hampered by a defective training and find the same work slow and laborious. Again, there are diversities of ability and of temperament which make an elastic arrangement desirable. At present the college regulations prescribe a maximum and a minimum of work which a student is allowed to take in each year. The minimum is, for Freshmen, 5.2 courses; for Sophomores, 4.6 courses; for Juniors, 4.4 courses; for Seniors, 4 courses. The upper limit allows one additional course in the Freshman year and two in any subsequent year. Between these limits there is every variety. Some, of course, whether from indolence or from interest in other things, will do as little as the rule permits; others voluntarily take more courses than are required. Many hard-working students confine themselves to the required amount, preferring to concentrate their work on a small number of subjects. Very few have availed themselves of the regulation quoted above to devote their whole time to three courses in their last year. The disposition of the majority is to take more than the required amount.

The second proposition of the Faculty is designed to provide a plan adapted to these various conditions. It is not correctly described as a proposition to reduce the college course to three years. It is a proposition to make it possible by a moderate reduction of the requirements for the degree — which would still leave the standard of the degree considerably higher than it was twenty years ago — to make it possible for those students whose best interests are served by their graduation in three years to do so under advantageous conditions. It cannot yet be looked upon as a definite or final solution of the problem set forth above as to the relation of the College to graduate and to professional studies. It is in the nature of a cautious experiment. How it would result no man can now foresee. Certainly it would produce no sudden or radical changes. Among the great mass of the present students there is unquestionably a sentiment in favor of the traditional four-years' course. If it should be made possible by moderate exertion to graduate in three years, there is nothing in the present attitude of the students to indicate that the majority would restrict their liberal training to this three-years minimum, any more than they are disposed to confine themselves to the minimum requirement of courses in any year. And these facts may well reassure those who fear that a general lowering of the standard of education would result from the adoption of the Faculty's propósals.

The number of those who have accomplished the requirements for the degree in three years has never been large, though in the past two years there has been a decided increase. In the table on pp. 108, 109 I have gathered the records of this class of cases for the past ten years. The persons represented are those who, having entered as Freshmen, performed the work of the college course in three years. This definition of course excludes all who entered with advanced standing, though no clear line can be drawn between some of those admitted as Sophomores and the Freshmen who anticipated more than two courses. It also excludes nine persons who accomplished the work of about three years and a half in three years, and who therefore ought to be mentioned in this connection. Three of them were students who were permitted at the end of their Junior year to register in the Medical School and to complete the remaining half-year of their college course while pursuing their professional studies.

The question of the organization of the graduate department was also by general consent left to the College Faculty, and was considered by them with great care. There was in the beginning a strong feeling that the department would have the best chance for growth if placed on an independent footing beside the professional schools, with its distinction from the College emphasized as strongly as possible. Perhaps a majority of the Faculty had contemplated an organization on the model of the philosophical faculty of a German university, and to the end a small but earnest minority maintained this view. But in the progress of the discussion the essential difference between our situation and that of a German university became clear, and the majority of the Faculty were convinced that the conditions imposed upon us by our historical development made such a separation of the undergraduate and graduate departments unnatural, if not impossible. Two facts, or rather one fact in two aspects, controlled the situation. One of these I have already had occasion to refer to — the essential continuity of the instruction in each de-

Year of Graduation.	Students.	Number of courses performed.					No. of courses required for degree.	Degrees with distinction.	Honors and Honorable Mention.
		Antici-pated.	First year.	Second year.	Third year.	Total.			
1883	1.	. .	5.3	8.	6.7	20.	19.	Magna cum laude	Honorable Mention in Mathematics, Chemistry, Natural History.
1884	1.	2.55	6.75	5.5	4.2	19.	"		
	2.	1.	6.6	6.3	5.4	19.3	"		
	3.		5.3	7.	6.7	19.	"		
	4.		5.3	7.	6.7	19.	"	Cum laude	Second-year Honors and Honorable Mention in Mathematics.
	5.		5.3	7.2	7.	19.5	"	Magna cum laude	Highest Second-year Honors in Classics. Final Honors in Classics. Honorable Mention in Greek and Latin.
1886	1.	2.	5.3	5.	6.7	19.	"	Magna cum laude	Honorable Mention in English Composition, Political Economy, Physics.
1887	1.	3.	6.4	4.8	5.2	19.4	18.4	Cum laude	Honorable Mention in Semitic, English Composition.
	2.	1.	4.4	6.6	6.4	18.4	"		
1888	1.		5.9	7.1	6.4	19.4	"	Cum laude	Honorable Mention in Engineering.
	2.	2.2	5.8	5.2	5.7	18.9	"	" "	Honorable Mention in Natural History.
	3.		5.4	5.6	7.4	18.4	"	" "	

1889	1.	2.	5.4	5.6	5.4	18.4	"	Magna cum laude	Second-year Honors in Classics and in Mathematics. Honorable Mention in Mathematics and Natural History.
	2.	.5	6.4	6.1	5.4	18.4	"	Cum laude	Honorable Mention in French.
	3.	3.4	6.	4.8	4.2	18.4	"		
	4.		7.	6.2	5.2	18.4	"		Honorable Mention in English Composition.
	5.		4.4	6.2	7.8	18.4	"		
1890	1.	4.	5.4	4.6	4.4	18.4	"	Cum laude	Honorable Mention in History.
	2.	.5	6.9	6.1	5.4	18.9	"	Magna cum laude	Second-year and Final Honors in Classics. Honorable Mention in Greek and Latin.
	3.		5.4	6.8	6.2	18.4	"		Honorable Mention in French.
	4.		5.9	7.1	6.4	19.4	"	Magna cum laude	Honorable Mention in Philosophy and Natural History (*bis*).
	5.		6.4	6.6	5.9	18.9	"	Summa cum laude	Highest Second-year Honors in Classics. Honorable Mention in Greek.
	6.		6.4	5.6	6.9	18.9	"	Summa cum laude	Honorable Mention in English Composition and Natural History (*bis*).
	7.		5.4	5.6	7.4	18.4	"		
	8.	1.	5.4	6.1	5.9	18.4	"	Magna cum laude	Highest Second-year Honors in Classics. Honorable Mention in French.
	9.	3.	5.4	6.6	6.4	18.4	"	Summa cum laude	Highest Honors in Modern Literature. Honorable Mention in English, German, Italian.
	10.		5.4	4.6	5.4	18.4	"		

partment of study, the impossibility of drawing any natural line of division between undergraduate and graduate courses. The second fact appeared when the attempt was made to formulate the constitution of the proposed graduate and undergraduate faculties: there was but one faculty, and unless some purely arbitrary method of selection were resorted to, entirely at variance with the principle on which our faculties are constituted, the two faculties would be two in name only.

The College Faculty therefore adopted, as the basis of its scheme of reorganization, a single faculty, which it proposed to call the Faculty of Arts, to have charge of the graduate department (to be called the Graduate School), Harvard College, and the Lawrence Scientific School. With this fundamental question settled, the working out of the details was comparatively easy. The plan adopted provided a Dean of the Faculty, who should also be Dean of the Graduate School, a Dean of the College, and a Dean of the Scientific School. It provided, further, for each of the three departments an Administrative Board, with the Dean as chairman, to whom the Faculty should commit at its discretion, with full power, the enforcement of its regulations and the conduct of all ordinary matters of administration and discipline, subject, however, to the statutory limitation that no student should be dismissed or expelled from the University except by a two thirds vote of the Faculty itself. It was proposed that the administrative boards should consist (exclusive of the Dean in each case) of fifteen members for the College, nine for the Graduate School, and six for the Scientific School; and one third of the members of each board, unless reappointed, were to retire yearly. To the Faculty itself were to be reserved the power to make all regulations and also the following matters of administration: instruction, including the selection and arrangement of courses, lecture hours, and examinations; admission, with or without examination; recommendation for degrees; award of pecuniary aids; appointment of advisers for new-comers; oversight of special students in Harvard College.

The proposition to reduce the requirements for the degree of Bachelor of Arts is still in the hands of the Board of Overseers. The plan of reorganization was adopted by the governing boards, with some changes of detail. With its final adoption by the Overseers, May 21, 1890, the College Faculty ceased to exist. Although the same members reassembled on the twenty-seventh of May as the Faculty of Arts and Sciences, the change was something more than a change of name. The new organization is significant of a great enlargement in the scope and complexity of our work, and the new

Faculty has been equipped with larger powers that it may meet larger responsibilities. But in the work itself there has been no break. It has reached its present proportions by no sudden change, but by natural growth. In its essential spirit and aim it is the same work which Harvard College has done from the beginning.

CLEMENT LAWRENCE SMITH, *Dean*.

DECEMBER, 1890.

THE LAWRENCE SCIENTIFIC SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — The following report of the Lawrence Scientific School for the year 1889–90 is respectfully submitted: —

The whole number of students connected with the School was sixty-eight, of whom twenty-eight were regular students. Seven students received the degree of Bachelor of Science at Commencement, of whom three had previously received the degree of Bachelor of Arts, and one that of Master of Arts, from Harvard College.

The requirements for admission to the School and the instruction in the prescribed courses remain practically as they were at the beginning of the year.

The Corporation, at the request of the Faculty of this School, has opened the Normal School Scholarships, which formerly were restricted to graduates of the normal schools in Massachusetts, to the graduates of all State normal schools in the United States. The effect of this action is already felt, and there is every probability that next year, for the first time, the whole number of these scholarships will have to be assigned. The students who have availed themselves of these scholarships have made excellent records; and with one exception they are all teaching or looking forward to teaching. It should be noted that until we have learned by experience of the advancement of these students we are unable to classify them; hence they stand in our lists as special students.

Instruction in the use of tools is now given, as it was last year, in the Cambridge Manual Training School. The Corporation has made such arrangements this year that the number of students who take this instruction is unlimited. The authorities of the Training School have shown great readiness to adjust their teaching to the needs of our students, and the present arrangement is in every way as satisfactory as they can make it. We must, however, look on this arrangement as only a temporary one, as, with the growth of the Training

School and the increase which we may fairly expect in the number of students who seek this instruction, the capacity of the Training School must soon be reached. We need, therefore, a workshop of our own.

It can now be stated that the course in practical field-astronomy, which has been asked for in former years, will be provided next year; and that the course in scientific German has been provided by the kindness of the German department.

I renew the statement that a pressing need of the School is a Professorship of Architecture. Supplied as we now are with all the instruction which is commonly and properly given in a course in Architecture except that which would be given by one more professor, it would seem that the friends of the School ought to provide the endowment necessary to establish this professorship.

Though relating to the year 1890-91, the statement may be allowed here that the number of students in the School continues to increase, being at the present time eighty-nine.

W. S. CHAPLIN, *Dean*.

DECEMBER 1, 1890.

THE GRADUATE DEPARTMENT.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — I have the honor of presenting my report for the academic year 1889–90 on the state of the Graduate Department; now the Graduate School.

In consequence of my absence from the University during the year, the duties belonging to the Secretary of the Academic Council were performed by the Secretary of the University, Mr. Frank Bolles. I beg to express my high sense of the excellent manner in which those duties were discharged; and to take this opportunity of saying that Mr. Bolles's active and intelligent interest in this Department in recent years has contributed greatly to its prosperity and vigor. In returning to the charge of the administrative business of the School, I rely on receiving valuable assistance from his zeal in furthering its healthy growth and detecting its needs.

The number of students registered in the Department in any part of the year was one hundred and eleven; of this number fifteen were classed as non-resident students, and ninety-six as resident students. The following table shows the amount and nature of the studies pursued by the students registered in the Department, and the proportion among such students of graduates and non-graduates of this University: —

Resident students doing full work as members of the Department for the whole academic year	62	
Resident students not doing full work, or not working for the whole year	34	96
Non-Resident students holding fellowships	11	
Non-Resident students not holding fellowships	4	15
Students (wholly or mainly) in Philology and Literature	33	
Students in Philosophy, History, Law, Political Science, Fine Arts, and Music	37	
Students in Mathematics, Physics, and Chemistry	22	
Students in Biology and Geology	19	111
Students continuing in this Department from 1888–89	56	
Students not registered in this Department in 1888–89	55	111
Harvard Bachelors of Arts or Science, not previously graduated elsewhere	62	
Harvard Bachelors of Arts, previously graduated elsewhere	11	
Students not holding the Harvard degree of A.B. or S.B.	38	111
Harvard Bachelors of Arts or Science, not holding the Harvard degree of A.M., Ph.D., or S.D.	50	
Students holding the Harvard degree of A.M., Ph.D., or S.D.	34	
Students holding no Harvard degree in Arts, Philosophy, or Science	27	111

The number of degrees given at the end of the year 1889–90 to graduate students, or upon recommendation by the Faculty of Arts and Sciences to professional students, is shown in the following table: —

A.B. to resident graduate students	3	
A.M. to resident graduate students	27	
A.M. to professional students on special courses of study	3	
A.M. to professional students with a professional degree	24	
Ph.D. to resident graduate students	8	65
A.M. or Ph.D. to Harvard Bachelors of Arts	41	
A.M. or Ph.D. to persons not Harvard Bachelors of Arts	21	62
A.B., A.M., or Ph.D. to graduate students, or on the ground of past studies in the Graduate Department	38	
A.M. to professional students	27	65

The following is a list of the persons admitted to the degree of *Doctor of Philosophy and Master of Arts:* —

Charles William Colby, A.B. (*McGill Univ.*) 1887, A.M. (*Harvard Univ.*) 1889; in Ecclesiastical History.

August Frederic Foerste, A.B. (*Denison Univ.*) 1887, A.M. (*Harvard Univ.*) 1888; in Geology.

Herman Wadsworth Haley, A.B. (*Amherst Coll.*) 1887, A.M. (*Harvard Univ.*) 1888; in Classical Philology.

Thaddeus William Harris, A.B. 1884, A.M. 1885; in Geology.

John Matthews Manly, A.M. (*Furman Univ.*) 1883, A.M. (*Harvard Univ.*) 1889; in English.

William Albert Setchell, A.B. (*Yale Univ.*) 1887, A.M. (*Harvard Univ.*) 1888; in Botany.

William Codman Sturgis, A.B. 1884, A.M. 1888; in Botany.

Edson Leone Whitney, A.B. 1885, A.M. 1888, LL.B. (*Boston Univ.*) 1887; in American History.

The fellowships were held, in the year 1889–90, by the following persons: —

Non-Resident Fellows.

Harris Fellowship, C. F. A. Currier, A.B. 1887, A.M. 1888, (*first year*), studying History and Constitutional Law at Berlin.

Rogers " J. H. Gray, A.B. 1887, (*first year*), studying Political Science at Halle.

" " F. L. Van Cleef, A.B. (*Oberlin Coll.*) 1884, (*Harvard Univ.*) 1885, (*second year*), studying Greek and Archaeology at Bonn.

Parker " M. Bôcher, A.B. 1888, (*second year*), studying Mathematics at Göttingen.

" " L. L. Jackson, A.B. 1885, Ph.D. 1888, (*first year*), studying Chemistry at Heidelberg.

" " J. W. Mack, LL.B. 1887, (*third year*), studying Comparative Jurisprudence at Berlin.

" " W. F. Osgood, A.B. 1886, A.M. 1887, (*third year*), studying Mathematics at Erlangen.

Kirkland " L. E. Gates, A.B. 1884, (*second year*), studying English Literature and History in London.

Walker " A. H. Lloyd, A.B. 1886, A.M. 1888, (*first year*), studying Philosophy at Berlin.

Tyndall Scholarship, D. W. Shea, A.B. 1886, A.M. 1888, (*second year*), studying Physics at Berlin.

Paine Fellowship, E. Cummings, A.B. 1883, A.M. 1885, (*second year*), studying Social Science in Great Britain.

Resident Fellows.

Morgan Fellowship, C. W. Colby, A.B. (*McGill Univ.*) 1887, A.M. (*Harvard Univ.*) 1889, (*second year*), studying History.

" " A. F. Foerste, A.B. (*Denison Univ.*) 1887, A.M. (*Harvard Univ.*) 1888, (*second year*), studying Geology.

" " H. W. Haley, A.B. (*Amherst Coll.*) 1887, A.M. (*Harvard Univ.*) 1888, (*second year*), studying Classical Philology.

" " J. L. Love, Ph.B. (*Univ. of North Carolina*) 1884, (*first year*), studying Mathematics.

" " J. M. Manly, A.M. (*Furman Univ.*) 1883, (*Harvard Univ.*) 1889, (*first year*), studying English Philology.

Ozias Goodwin Memorial Fellowship, W. Paul, A.B. 1889, (*first year*), studying History and Constitutional Law.

Henry Bromfield Rogers Memorial Fellowship, J. G. Hume, A.B. (*Toronto Univ.*) 1887, A.M. (*Harvard Univ.*) 1889, (*first year*), studying Ethics.

One of the Morgan fellowships was vacant, in consequence of the necessary change of plans of the appointee. The Memorial fellowships, founded in 1889 by Mr. William Story Bullard in grateful and affectionate remembrance of three friends, and designed for students of Political Economy, of Constitutional or International Law, and of Ethics in its relations to Jurisprudence or Sociology, respectively, were offered for the first time for 1889–90; that which bears the name of Henry Lee remaining vacant, on account of no suitable candidate presenting himself at the time of making appointments.

At the close of the academic year, Messrs. Colby, Foerste, Haley, and Manly were admitted to the degree of Ph.D. at this University; Mr. Osgood, to the degree of Ph.D. at Göttingen; Mr. Van Cleef, to the degree of Ph.D. at Bonn; and Mr. Love, to the degree of A.M. at this University. Messrs. Colby, Gates, Hume, Love, Mack, Osgood, Paul, and Van Cleef withdrew from their fellowships at the close of the academic year, and Messrs. Gates, Love, and Osgood received appointments as instructors at this University. Messrs. Foerste and Haley were transferred from Morgan to Parker fellowships, permitting study abroad; and Mr. Currier was transferred from the Harris to a Rogers fellowship, which has a larger income. The other persons (seven in number) named in the above list were reappointed; and the following new appointments were made for the year 1890–91: —

Harris Fellowship, Edward Everett Hale, Jr., A.B. 1883, now studying English Philology at Halle.

Kirkland " Frank Beverly Williams, A.B. 1888, A.M. 1890, now studying History at Berlin.

Morgan " Richard Edward Edes, A.B. (*Johns Hopkins Univ.*) 1889, now studying Physiology and Psychology at this University.

" " Dickinson Sargent Miller, formerly a student at the University of Pennsylvania and at Clark University, now studying Philosophy at this University.

" " Joseph Torrey, Jr., A.B. (*Bowdoin Coll.*) 1884, A.M. (*Ibid.*) 1887, now studying Chemistry at this University.

" " Lucien Marcus Underwood, Ph.B. (*Syracuse Univ.*) 1877, Ph.D. (*Ibid.*) 1879, Professor of Botany at Syracuse University, studying Botany at this University.

" " Henry Baldwin Ward, A.B. (*Williams Coll.*) 1885, studying Zoölogy at this University.

Henry Lee Memorial Fellowship, Thomas Elmer Will, A.B. 1890, studying Political Science at this University.

Ozias Goodwin Memorial Fellowship, Herman Vandenburgh Ames, A.B. (*Amherst Coll.*) 1888, A.M. (*Harvard Univ.*) 1890, studying Constitutional Law at this University.

Henry Bromfield Rogers Memorial Fellowship, William Edward Burghardt DuBois, A.B. (*Fisk Univ.*) 1888, A.B. (*Harvard Univ.*) 1890, studying Ethics in its relations to Sociology at this University.

The Harris, Rogers, Parker, John Thornton Kirkland, James Walker, and Robert Treat Paine Fellowships and the John Tyndall Scholarship regularly permit study in Europe; the Morgan Fellowships require study at this University; the three Memorial Fellowships may be assigned either to resident or to non-resident students.

Twenty students in the Graduate Department held Thayer, Townsend, and Shattuck Scholarships. In addition to these scholarships, the James Savage, Toppan, Charles Haven Goodwin, George and Martha Derby, and Gorham Thomas Scholarships, making thirty-three scholarships in all, have now been reserved for the enjoyment of graduate students.

The number of candidates applying at the prescribed time (the *last day of March*, 1890) for fellowships and scholarships, to be held in the Graduate School during the academic year 1890–91, was *one hundred and seven*. Of these, sixteen desired to pursue studies in Classical Philology; twelve, in other branches of Philology; eleven, in Philosophy; twenty-one, in History, Political Science, and Sociology; one, in Music; eleven, in Mathematics; five, in Physics; ten, in Chemistry; twelve, in Natural History; and two, in American Archaeology and Ethnology; while six made no statement as to their intended courses of study or proposed to pursue courses in different branches. Thirty-two were graduate students of this University; twenty-seven, members of the Senior class of Harvard College; one, a member of a professional school; eleven, former students of the University; and thirty-six had never been connected with the University. Thirty-seven had received the degree of A.B., S.B., A.M., Ph.D., or S.D. from this University, many of these having been previously graduated elsewhere; forty-three were graduates of other institutions, and not of this University; twenty were Seniors of Harvard College who had not been previously graduated elsewhere; and seven were undergraduate or non-graduate students at other universities. Eight were or had been professors, and six instructors of lower grade, in some other college or university; eight were or had been instructors or assistants here; and fifteen were or had been instructors in important schools.

Of the candidates thus enumerated, twenty received fellowships; twenty-seven received scholarships; six were appointed to instructorships or assistantships which permit their continuing their own studies in the Graduate School; eight are members of the Graduate School without holding appointments; and five entered the Senior class of Harvard College. Forty-one, having failed to receive appointments, are unconnected with the University; but some of these have obtained positions at other institutions, through the influence of recommendations given here. A small number of applications for scholarships were made at dates subsequent to the last day of March; and six of these applications were successful.

Of the fifty-three persons appointed to fellowships or scholarships, eight are students of Classical Philology; nine, of other branches of Philology; four, of Philosophy; six, of History; six, of Political Science or Sociology; six, of Mathematics; two, of Physics; four, of Chemistry; seven, of Natural History; and one, of American Archaeology and Ethnology.

Most of the unsuccessful applicants were persons whom we should have gladly welcomed to the Graduate School; and there can be no doubt that we still need an increase in the number of fellowships and scholarships available for graduate students. It is worthy of consideration whether the time has not arrived for the foundation by the Corporation of a certain number of University scholarships, covering the tuition-fees of good applicants who cannot be otherwise provided for. The Catalogue for the current year contains the names of thirty-one members of the Senior class of Harvard College who are registered as already graduates of other institutions. A large proportion of these students should properly be classed in the Graduate School; but many of them have elected to enter the undergraduate department in order to avail themselves of Price Greenleaf Aid and of scholarships which can be given only to students of the College. This condition of affairs threatens to be a serious obstacle to the growth of the Graduate School; and it can be remedied only by new and ample foundations for the benefit of its students, or by removing entirely the lines which separate it from the College.

The changes made in the organization of the University, towards the close of the academic year 1889–90, have an important bearing on the Graduate Department; and will, in my judgment, conduce, in a high degree, to its prosperity, its usefulness, and its dignity. The Academic Council has been replaced by the University Council; and this body has the function of considering questions of policy for the whole University, and questions concerning more than one Faculty. The Graduate Department — now styled the Graduate School — is transferred from the charge of the Academic Council to that of the new Faculty of Arts and Sciences; which also embraces under its care the College and the Lawrence Scientific School; while the ordinary administration of the three departments thus associated is remitted to three separate Boards, each under the chairmanship of a Dean. The Graduate School thus assumes its proper place at the

THE DIVINITY SCHOOL.

To the President of the University:

Sir, — As Dean of the Divinity Faculty, I beg to present the following report for the academic year 1889–90: —

There were connected with the Divinity School thirty-five students, as follows: —

Resident Graduates	10
Senior Class	4
Middle Class	7
Junior Class	12
Special Students	2

There were one hundred and eighty-three elections, by students in other departments of the University, chiefly in the College, of courses which were originally peculiar to the Divinity School, but which may now be counted also for the degree of A.B. These were chiefly in connection with the courses on Practical Ethics (105) and on Church History (50).

Twelve of the students were graduates of Harvard College. Fourteen other colleges were represented. Among the Resident Graduates eight Theological Seminaries were represented, as follows: —

Canton	1
Boston	1
Meadville	1
Oberlin	1
Princeton	1
Tufts	1
Union	1
Yale	3

Although the number of students is still small, never but once in the history of the School has it been so large as during the last year. In the year 1869, on the occasion of the breaking up of a theological school which had been established in Boston, for the purpose of preparing for the ministry men who were destitute of much previous training, its students were admitted to the Harvard Divinity School without examination. By this influx the number of students was suddenly raised to thirty-six. Out of this number there were only five who had received a liberal education, though two had received the degree of LL.B. and one that of S.B. The number which is reported for last year has been reached by a process of natural growth, and all but one of the students had graduated either from

Instructors.	Subjects.	No. of hours per week.	Attendance.	
			Divinity Students.	College Students.
	OLD TESTAMENT.			
Prof. Lyon	Hebrew I. — Davidson's Grammar. — Readings from Genesis and the Psalms	3	6	4
Prof. Toy	Hebrew II. — Driver's Hebrew Tenses. — Readings from the Old Testament, including the whole of Micah and Ecclesiastes, most of Ezekiel, with selections from other books	2	3	2
Prof. Lyon	Jewish Aramaic. — Kautzsch's Grammar. — Brown's Aramaic Method. — The Aramaic portions of Ezra and Daniel were read and a few pages from the Targums	2*	2	1
Prof. Lyon	The History of Israel, Political and Social. — Lectures and Theses	2	14	5
Prof. Toy	The History of pre-Christian Hebrew Literature. — Readings in various authors were assigned to students, on which they were examined. The critical examination of Hebrew Literature from the earliest times to the end of the exile was conducted by lectures. Two Theses and several Themes were required	2	17	
Prof. Toy	History of the Religion of Israel. — Tiele's "Outline of the History of Religion." — Kuenen's History of the Religion of Israel. — Lectures and Theses	2	12	3
	NEW TESTAMENT.			
Prof. Thayer	New Testament Times: — the political, social, moral, and religious condition of the World when Christ appeared	2*	12	
Prof. Thayer	Outline Lectures on Theological Encyclopaedia and Literature; the Characteristics of the New Testament Greek; the Septuagint; Textual Criticism; the Life of Christ. — Study of the Gospels. — Essays and Criticisms	2	6	

Prof. Thayer	New Testament Introduction: — the Origin, Contents, and History of the New Testament Writings, together with the Formation of the Canon	2†	12	
Prof. Thayer	Outline lectures on the Life of Paul; Study of the Epistles; Essays and Criticisms	2	8	
Prof. Thayer	Lectures on our English Bible and its recent Revision. — Lectures on topics in Biblical Theology. — Exposition of Difficult Texts. — Essays and Criticisms	2	5	
Prof. Lyon	Classical Aramaic (Syriac). — Grammars of Nöldeke and Hutchinson-Uhlemann. — Roediger's Chrestomathia Syriaca	2†	1	1
	CHURCH HISTORY.			
Dr. Allen	The Era of the Reformation in Europe from the rise of Italian Humanism to the close of the Council of Trent, 1350–1563	2	8	50
	COMPARATIVE RELIGION.			
Prof. Everett	Studies in the Comparative History of Religions, particularly the Vedic Religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese Religions	2	18	6
	THEOLOGY.			
Prof. Peabody	The Philosophy of Religion. — An Introduction to the study of Theology	1	8	4
Prof. Everett	Systematic Theology begun: The Psychological basis of Religious Faith	2	20	
Prof. Everett	Systematic Theology continued: The Content of Christian Faith. An elaborate essay on some Theological suject is expected from each student taking this course	3	18	2

* During the first half-year. † During the second half-year.

Instructors.	Subjects.	No. of hours per week.	Attendance.	
			Divinity Students.	College Students.
	ETHICS.			
Prof. Peabody	The Practical Ethics of Social Reform. — An examination of the problems of Charity, Temperance, Labor, Divorce, Prisons, the Indian question, etc. — Lectures, Essays, and the study of Institutions	2	7	105
	HOMILETICS AND PASTORAL CARE.			
Prof. Peabody and Mr. Hale	The Structure and Analysis of Sermons	1	10	
Profs. Everett and Peabody	Each student writes six sermons during the year, three of which are preached before the two upper classes and criticised by students and Instructor; the rest are criticised privately, both as to composition and delivery, in preparation for the public preaching named below	1	12	
Prof. Peabody	Pastoral Care and the Conduct of Public Worship. — Lectures	1*	10	
	ELOCUTION.			
Mr. Kirby	I. — Class work twice a week, supplemented by private instruction	4	11	
Mr. Kirby	II. — Similar to the above	4	9	
	GENERAL EXERCISES.			
	Preaching by students in the Chapel of the School, open to the public. Once a week. — Meetings for Debate. Once in two weeks. — Meetings for Religious Conference, conducted by students, alternating with the above. Once in two weeks. — Morning Prayers, conducted by professors and students.			

* During the second half-year.

a college or a theological seminary, or both; and the single exception, a Special Student, had received the degree of Ph.B.

In the year 1882–83 there was present in the School, for the first time, a graduate of another theological seminary, who came without any purpose of entering the Unitarian ministry. This was three years after the change by which the School reaffirmed the principle upon which it was founded, and began the attempt to make of itself something larger than a training place for the ministers of a single denomination. It had taken so long for the announcement of this purpose to produce any practical effect. Since then the number of such students has gradually increased, there having been ten the last year, and there being sixteen the present year. The standing of some of the men who thus come to us may be illustrated by the fact that of those connected with the School during the last year, one is now Professor of Philosophy and College Chaplain at the University of North Carolina, and another is an Assistant Professor at the Meadville Theological School, his chief work being instruction in Hebrew and in other studies relating to the Old Testament.

Finding a tendency of students, of the class referred to, to come to the School, the Faculty have for the few past years, with the consent of the Society for Promoting Theological Education, offered two resident Williams Fellowships for graduates of any theological school who should best fulfil the somewhat high requirements that were the conditions of holding them. Only one of these was assigned the last year. The holder of it, a recent graduate of the Theological Seminary at Princeton, came from, and returned to, work in connection with the Presbyterian church at the West.

While these students are encouraged to do independent work, they prefer, for the most part, to enter into the regular exercises of the School, studying in connection with the lectures ordinarily given.

While it must be regretted that the regular classes are not larger, the presence of these Graduate Students is pleasant as introducing an interesting element, and as showing a beginning of that kind of university work which it was hoped the School under its present system might accomplish.

The Junior Class of last year was larger than it has been for some time. It is to be hoped that this is the beginning of an improvement in this direction also.

During the last few years it has now and then happened that men unable to pass the examinations required for entering the Divinity School as Special Students have entered the College as Special Students, simply for the purpose of taking part in the exercises of the

School. This is obviously an evasion of our rules, but it is one that is not necessarily to be condemned. The Faculty, whether collectively or individually, have the power to exclude from any exercises students whose presence is undesirable. The School takes no responsibility for such men, their names not appearing in its catalogue; while the difficulties attending this method are such that none who are not thoroughly in earnest will be likely to avail themselves of it. Two such students were in attendance the last year.

The report in regard to the Library for the last year is as follows: —

	Vol.	Pam.
In the Library, Oct. 1, 1889	21,528	3,197
Added between Oct. 1, 1889, and Sept. 30, 1890	506	1,852
	22,034	4,849
Less duplicates sold between Oct. 1, 1889, and Sept. 30, 1890	453	997
	21,581	3,852
Less change caused by binding	5	. .
In the Library, Oct. 1, 1890	21,576	3,852

Of the accessions 192 volumes and 1 pamphlet were purchased. The most important gift of the year was that of 47 volumes by the bequest of Rev. William Silsbee. This was increased by the gift of 22 volumes made by his widow from his library. Books and pamphlets (of the latter 1383) were given by Mrs. Henry W. Foote from the library of her late husband. Similar gifts from the library of Dr. Hedge were made by his children. 30 volumes and 43 pamphlets were received from the American Unitarian Association, through which gift we have all of the publications of this Association which are now in print.

The important work of cataloguing the Library has been diligently carried on during the year. The object of the catalogue is not merely to enable a person to obtain books, the titles and authors of which he knows, but also to make it possible for any one wishing to consult the Library in regard to any topic to learn what is the help which the Library can give him. Books are thus catalogued, not only as to title and author; there is also given, so far as important books and subjects are concerned, some analysis of their contents. To take an obvious example, one studying in regard to the authorship of the fourth Gospel might perhaps have no idea that in Ezra Abbot's "Critical Essays" is contained one of the most important discussions of this subject. In the new catalogue, under the appropriate heading, reference will be made to this and to other discussions that are worth consulting. This analysis obviously requires to be made very carefully and with great judgment. It requires, also, learning both general and special. We are fortunate in having to conduct this work a librarian so well fitted for it as Robert S. Morison, A.M., D.B., a graduate of the School. This work involves an expenditure which the School is hardly able to bear, but the need is so pressing that the work cannot be deferred. From the nature of the case the process is a slow one, especially as those engaged in it have other duties in connection with the Library. During the year 3180 volumes were catalogued.

The greater part of the use of the Library is that of the reserved books in the reference room; of this no statistics can be given. From October 1st, 1889, to June 30th, 1890, there were taken from the stack 758 volumes, and from the reserved books, for use over night, 665 volumes. There was a tolerably steady increase, month by month, in the number of books borrowed from the stack. The number of such books in October this year was more than a third larger than that in October, 1889.

In my last report reference was made to the value of objects illustrating Biblical subjects. Since that time a gift of money has been announced from Mr. Jacob H. Schiff to the University for the beginning of a Semitic museum. While this museum will have no organic connection with the School, its resources will always be at the service of Divinity Students, and cannot fail to increase interest among us in the study of the Bible. The School may congratulate itself on having within easy reach collections so intimately connected with Biblical peoples and history.

In the absence of Professor Emerton the courses in Church History were, for the most part, omitted. The School was, however, fortunate in obtaining the services of Professor A. V. G. Allen, D.D., of the Cambridge Episcopal School, who gave one course of lectures in this department.

The opening lecture of the year, which is given to the whole School, was this year delivered by Professor Lyon on Old Testament Study in Theological Education. It was largely attended by students and others not connected with the School, as well as by our own Faculty and students.

Gatherings such as have been called "Seminaries," but are now more generally styled "Conferences," were held fortnightly in connection with the departments of the Old and the New Testaments and of Theology.

An interesting course of lectures, similar to those that have before been given in Divinity Chapel, by officers of the University not teachers of the School, was the last year delivered on Certain Aspects of the History of Religion, as follows: —

Archaeological Evidence of Ancient Religious Rites in the Ohio Valley: FREDERICK WARD PUTNAM, A.M., Curator of the Peabody Museum, and Peabody Professor of Archaeology and Ethnology.

The Roman Worship of Mars, Jupiter, and Juno in the Earliest Times: FREDERICK DE FOREST ALLEN, Ph.D., Professor of Classical Philology.

The Every-day Religion of the Greeks: JOHN HENRY WRIGHT, A.M., Professor of Greek.

The Religion of the Upanishads: CHARLES ROCKWELL LANMAN, Ph.D., Professor of Sanskrit.

The Ancient Scandinavian Belief in a Future Life: GEORGE LYMAN KITTREDGE, A.B., Instructor in English.

The Elements of Power in the Preaching of Christ: LYMAN ABBOTT, D.D., Preacher to the University.

A table is added presenting the courses of instruction given the last year, and the attendance.

C. C. EVERETT, *Dean.*

THE LAW SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — I beg to submit the following report upon the Law School for the academic year 1889–90: —

The table on p. 127 gives the courses of study and instruction during the year, the names of the instructors, the text-books used, the number of exercises per week in each course, and the number of students who offered themselves for examination in each course at the end of the year.

structors.	Studies and Text-books.	Exercises per week.	No. of students examined.
	FIRST YEAR.		
f. Keener	Contracts. Langdell's Cases on Contracts	3	105
f. Gray	Property. Gray's Cases on Property, vol. 1, 2	2	92
Schofield	Torts. Ames's Cases on Torts	2	97
f. Ames	Civil Procedure at Common Law. Ames's Cases on Pleading	1	104
Chaplin	Criminal Law and Procedure. No text-book	1	104
	SECOND YEAR.		
f. Ames	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	43
f. Keener	Contracts. Keener's Cases on Quasi-Contracts	2	62
f. Thayer	Evidence. No text-book	2	44
f. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases in Equity Pleading	2	20
f. Gray	Property. Gray's Cases on Property, vol. 3, 4	2	63
f. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	29
f. Ames	Trusts. Ames's Cases on Trusts	2	64
	THIRD YEAR.		
f. Keener	Agency. No text-book	2	59
f. Thayer	Constitutional Law. No text-book	2	29
f. Langdell	Jurisdiction and Procedure in Equity. No text-book	2	32
f. Ames	Partnership and Corporations. Ames's Cases on Partnership	2	56
f. Langdell	Suretyship and Mortgage. No text-book	2	27
f. Gray	U. S. Practice. No text-book	1	13
f. Gray	Law of Persons. No text-book	1	14
f. Ames	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	29
f. Keener	Contracts. Keener's Cases on Quasi-Contracts	2	2
f. Thayer	Evidence. No text-book	2	3
f. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases in Equity Pleading	2	2
f. Gray	Property. Gray's Cases on Property, vol. 3, 4	2	1
f. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	13
f. Ames	Trusts. Ames's Cases on Trusts	2	2

The following table exhibits the attendance at the School during the last twenty years: —

Year.	Whole no. of students.	No. present during the whole year.	No. present only part of the year.	Average number.
1870–71	165	107	58	136
1871–72	138	107	31	123
1872–73	117	109	8	113
1873–74	141	121	20	131
1874–75	144	130	14	137
1875–76	173	153	20	163
1876–77	199	168	31	184
1877–78	196	172	24	183
1878–79	169	137	32	154
1879–80	177	138	39	157
1880–81	161	136	25	149
1881–82	161	139	22	146
1882–83	138	120	18	129
1883–84	150	130	20	140
1884–85	156	139	17	148
1885–86	158	142	16	151
1886–87	188	160	28	174
1887–88	225	197	28	211
1888–89	225	198	27	212
1889–90	262	229	33	245

The following table exhibits the School as divided into classes since the establishment of the three-years' course and the examination for admission: —

Year.	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
First	72	63	78	57	61	59	58	75	55	75	89	74	90
Second . . .	79	50	32	58	41	38	40	37	46	47	55	66	59
Third	.	.	21	14	25	20	22	17	17	24	33	27	52
Sp. Students.	31	47	46	32	34	21	30	28	40	42	46	58	62

In regard to the last table, it is to be observed that, although the three-years' course went into operation at the beginning of 1877–78, there was no third-year class until 1879–80. It is also to be observed that the second-year class of 1877–78 did not take the three-years' course, but was graduated at the end of the second year, that class having entered the School before the three-years' course went into operation.

The following table exhibits the results of the examinations for mission in each year since they were established: —

	1877–78.	1878–79.	1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
ffered . . .	16	15	18	25	19	12	12	17	17	14	33	15	20
dmitted . .	7	7	12	13	16	10	5	11	7	6	17	11	10

The following table exhibits the results of the examinations for a gree in each year since the establishment of the three-years' ırse: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877–78	66	51	15	66	47	19	.	.	.
1878–79	50	42	8	40	39	1	.	.	.
1879–80	73	69	4	28	26	2	22	18	4
1880–81	45	43	2	49	46	3	18	18	0
1881–82	49	44	5	38	37	1	36	33	3
1882–83	46	44	2	36	34	2	21	19	2
1883–84	51	41	10	35	31	4	26	25	1
1884–85	61	56	5	30	29	1	23	19	4
1885–86	54	48	6	41	38	3	18	18	0
1886–87	66	59	7	40	38	2	26	26	0
1887–88	80	70	10	43	34	9	33	32	1
1888–89	72	66	6	58	55	3	30	29	1
1889–90	86	75	11	52	49	3	51	47	4

In regard to the foregoing table it is to be observed that it inıdes no Special Students, and hence that all the applicants included it were either graduates of colleges or had passed the examination r admission. Of course this remark does not apply to the secondar class of 1877–78, and this accounts in part for the much greater mber of failures in that class.

The following table exhibits the number of students who have reived the honor degree in each year since it was established: —

1879–80.	1880–81.	1881–82.	1882–83.	1883–84.	1884–85.
7	3	10	10	5	5
1885–86.	**1886–87.**	**1887–88.**	**1888–89.**	**1889–90.**	
7	9	9	12	14	

The following table exhibits the number of students who, since the tablishment of the three-years' course, have been examined for a degree in the studies of any year without having been members of the School during that year: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877–78	5	2	3	.	.	.	.	.	.
1878–79	3	2	1	.	.	.	.	.	.
1879–80	6	4	2	1	1	0	5	4	1
1880–81	6	4	2	.	.	.	4	4	0
1881–82	2	1	1	.	.	.	10	8	2
1882–83	3	3	0	.	.	.	3	2	1
1883–84	7	6	1	.	.	.	3	3	0
1884–85	3	2	1	.	.	.	6	4	2
1885–86	4	3	1	.	.	.	2	2	0
1886–87	3	3	0	.	.	.	4	4	0
1887–88	5	3	2	1	0	1	2	2	0
1888–89	12	8	4	.	.	.	3	3	0
1889–90	7	6	1	.	.	.	.	.	.

The following table exhibits the number of students who have entered the School in each year during the last twenty years, and shows how many of them were graduates of colleges; and of the latter, how many were graduates of Harvard and how many of other colleges: —

Year.	Whole number of entries.	Graduates of colleges.	Harvard graduates.	Graduates of other colleges.	Non-graduates.
1870–71	105	60	19	41	45
1871–72	92	56	26	30	36
1872–73	87	47	22	25	40
1873–74	95	58	29	29	37
1874–75	102	55	40	15	47
1875–76	119	67	39	28	52
1876–77	128	77	47	30	51
1877–78	111	79	47	32	32
1878–79	102	62	38	24	40
1879–80	124	76	59	17	48
1880–81	91	60	41	19	31
1881–82	97	53	29	24	44
1882–83	84	56	33	23	28
1883–84	86	61	47	14	25
1884–85	101	79	56	23	22
1885–86	88	60	35	25	28
1886–87	113	80	46	34	33
1887–88	134	82	52	30	52
1888–89	111	77	50	27	34
1889–90	153	102	66	35	52

The following table exhibits the average age at which students ve entered the School in each year since 1873–74, that being the st year in which a record of ages was kept; also the age at which arvard graduates, graduates of other colleges, and non-graduates spectively, have entered the School in each year since 1873–74; so the average age at which students have entered the School during e whole period since 1873–74; also the average age at which rvard graduates, graduates of other colleges, and non-graduates spectively, have entered the School during the whole period since 73–74: —

Year.	Of whole number of entries.	Of Harvard graduates.	Of graduates of other colleges.	Of non-graduates.
1873–74	23.34	23.58	23.76	22.83
1874–75	22.71	23.66	22.78	21.88
1875–76	22.98	22.35	23.28	23.28
1876–77	22.33	22.83	22.49	21.76
1877–78	23.34	23.25	23.83	22.97
1878–79	22.56	23.14	22.88	21.81
1879–80	23.20	23.46	22.77	23.02
1880–81	22.36	22.66	23.11	21.50
1881–82	22.68	23.06	23.73	21.85
1882–83	22.73	22.94	23.12	22.18
1883–84	22.64	23.17	22.86	21.53
1884–85	22.68	23.33	22.10	21.65
1885–86	22.73	23.21	22.84	22.03
1886–87	22.90	23.31	24.00	21.50
1887–88	22.86	23.33	23.42	22.07
1888–89	23.07	23.26	23.84	22.23
1889–90	22.91	23.19	22.83	22.42
73–74 to 1889–90	22.84	23.19	23.21	22.18

It is now just twenty years since a series of important changes was gun in the character and methods of the School; and these changes ve had so great an effect upon the fortunes of the School that they ve rendered the year 1870–71 memorable as the beginning of a new ler of things.

To trace in detail all the changes of the last twenty years and indi- e the reasons for making them, would occupy too much space, and uld perhaps be tedious. A few points of comparison between 39–70 and 1889–90 are all that there is room for, and perhaps all t is appropriate. Suffice it, therefore, to say that in 1869–70 re were no examinations either for admission to the School or for legree; and those who received the degree of Bachelor of Laws at close of that year were required to show only that they had paid book, and the subjects as well of study as of instruction are those original materials of the law which constitute the stock-in-trade alike of the judge, the practicing lawyer, the writer, and the teacher.

In 1869–70 the library was so nearly a wreck that it required to be reconstructed almost from its foundations. Now, it is believed to be larger (referring only to law-books proper, and excluding statutes), more complete, and in a better condition than any other law library in the United States, with the possible exception of the national library at Washington. Its duplicates, triplicates, and quadruplicates of English and American reports alone number 3040 volumes. From the beginning of 1870–71 to the close of 1889–90, 14,421 volumes were added to the library at an expense of $48,399.32. During the same period $10,423.37 were expended upon the binding and repairing of books. Prior to 1870–71 the only persons employed to care for the library were a student-librarian and the janitor of Dane Hall. From the opening of the library in the morning until the closing of it at night it was subject to no supervision or control whatever. All persons who chose resorted to it, used it as they pleased, and behaved in it as they pleased; and thus disorderly conduct, spoliation, and theft were constantly occurring. Now, a permanent librarian, a permanent assistant librarian (both of whom have held their present positions for the last eighteen years), and three assistants are constantly employed in the care and administration of the library and in other administrative duties.

Prior to 1870–71, and subsequently to the time of Professor Greenleaf, no one connected with the School took much interest in the subject of purchasing books for the library. The practice was for the booksellers with whom the School kept an account to send to the library a copy of every new book received by them; and, as to each book so sent, one of the Professors decided whether it should be kept or not. As to the purchase of other than new books, there was no system whatever; and such books were seldom purchased unless for some special reason; and when it was decided to purchase any such books an order for them was given to a bookseller. Under this practice the library seldom received any accessions of old books; and, even had this been otherwise, it would almost inevitably have happened that most of the accessions received would represent some person's hobby, and so would improve the library only in some one direction. Moreover, old books purchased in such a way are sure to cost two or three times as much as they need cost. There are thousands of law-books without which no library is perfect, and which yet have no fixed market-value, and which may be said to be more or less rare in the sense of being more or less difficult to find, but very prosecuted with as much rapidity as possible; and no money has ever been spent in rebinding or otherwise repairing a book until it was first collated. Up to this date, not much less than 20,000 of the 25,000 volumes and upwards which the library now contains have been collated in the manner before stated. Of course all defects discovered have been carefully noted, and a list has been kept of all defective volumes, and in numberless cases such defects have been supplied by purchases made at auction or otherwise, and always at a trifling expense.

In a library that is so incessantly used as ours is, the subject of binding and repairing books is scarcely second in importance to that of the purchase of books; and it is a subject as to which it is much more difficult to maintain a high standard. Moreover, the difficulties which are inherent in the subject are with us much enhanced by the very low condition of the art of law-binding in this country.

Prior to 1870–71 the library was as little cared for in respect to the binding and repairing of the books as in other respects. Binders were employed with little regard to their ability to do good work, and little pains were taken either to give them proper directions or to see that they did their work in accordance with such directions as were given them, or that they did it properly; and the results were deplorable. In no case was the work what would now be regarded as good; in many cases it was shocking in respect both to the work done and the materials employed; and in many other cases books were actually ruined by the binder.

Since 1870–71 the most strenuous efforts have been made to improve the administration of the library in respect to the binding and repairing of books; and, though the success of these efforts has not been all that could be desired, yet it has upon the whole been gratifying; for the library may now safely challenge comparison in respect to its condition with any other law library in the United States. What has been done, however, has been at a heavy cost to the librarian. He has been obliged to create a standard of his own and educate his binder up to it; and it is only by the exercise of unceasing vigilance, combined with much technical knowledge, that he has succeeded in maintaining so high a standard as he has maintained.

Prior to 1870–71 the School manifested little interest in its old students and nothing was known of them except by accident. In 1889–90 the School issued a quinquennial catalogue which, in completeness and accuracy, may challenge comparison with any similar work ever published. Prior to 1870–71 the old students of the School had no organization among themselves, and therefore as a body exerted no influence in favor of the School; and few of them individually manifested much interest in the School. Now (and since 1886), the old students are formed into an Association, which has a membership of more than 1600, is represented in forty-three States and Territories by one or more local officers, and is most actively devoted to the interests of the School.

Finally, in 1869–70 the tuition-fees of the School amounted to $11,525, and at the end of the year the Treasurer's accounts showed a surplus of $1212.60, while in 1889–90 the tuition-fees amounted to $36,465, and at the end of the year the Treasurer's accounts showed a surplus of $12,193.93.

C. C. LANGDELL, *Dean*.

DECEMBER 12, 1890.

THE MEDICAL SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — As Dean of the Medical Faculty I have the honor to submit the following report upon the Medical School for the academic year 1889–90: —

The only important change in the character of the instruction given is the arrangement by which second-year students receive surgical instruction in small sections, each section serving four to six weeks as dressers in the out-patient departments of the Massachusetts General Hospital. The whole class thus acquires a practical familiarity with surgical work which has heretofore been attainable only by a few favored individuals.

The courses for graduates and the summer courses of instruction, the establishment of which was alluded to in the last report, have attracted a large number of students and bid fair to become important features in the work of the School.

The construction of the Sears Laboratory of Pathology and Bacteriology has been carried on during the past year, and, notwithstanding many vexatious delays occasioned by strikes among the laborers, the building is now nearly ready for occupation.

The Faculty, fully aware of the importance of securing increased facilities for clinical instruction, has devoted much time to the consideration of the best method of bringing about this result, but no definite plan has, as yet, been adopted. A hospital under the control of the Faculty would, of course, afford the best solution of the problem, and no worthier object can be suggested to friends of medical education than the establishment and endowment of such an institution.

Among the other immediate needs of the School may be mentioned: —

(1) The endowment of the department of Bacteriology in order to enable the head of that department to devote his whole time to the work of instruction and research, and to secure the assistance without which research is very slow and laborious.

(2) The provision of a more complete equipment of microscopes and apparatus for the department of Histology and Embryology. At present a considerable number of students are excluded from the laboratory course in Microscopy for the want of the necessary accommodations. In view of the great and increasing importance of the microscope in medicine, it is desirable that all the students of the School should be trained in its use.

In addition to the regular instruction given in the School, the amount and character of which is fully set forth in the tables appended to this report, much special work has been done in various departments, chiefly in the direction of original research.

Anatomy. — By studies in the dissecting room and the collection of osteological specimens material has been secured for the investigation of the relations between the shape of the bones and the figure of the individual.

The Professor of Anatomy has published observations on one hundred skulls, showing the relation of the cranial sutures to the age of the individual, and also a second series of observations on the breast bone as an index of age, sex, and height.

Histology and Embryology. — Assistant Professor Charles S. Minot has been engaged upon the preparation of his work on Human Embryology, and in connection with his studies for it has prepared the following two articles, which are now in press: —

(1) On certain phenomena of growing old. Address delivered as Vice-President before the American Association for the Advancement of Science, at Indianapolis, 1890.

(2) On the fate of the human decidua reflexa (to appear in the Anatomischen Anzeiger).

Dr. Minot has also published the following papers representing the results of laboratory work: —

Die Placenta des Kaninchens. Biol. Centralbl. x. 114–122. 1890.

Evolution of the Medullary Canal. Am. Nat. xxiii. 1019–1021. 1890.

Concrescence Theory of the Vertebrate Embryo. Am. Nat. xxiv. 501–516; 617–629. 1890.

The Mesoderm and the Coelom of Vertebrates. Am. Nat. xxiv. 877–898. 1890.

Zur Morphologie der Blutkörperchen. Anat. Anz. v. no. 21, 601–604. 1890.

TABLE I. — SHOWING THE AMOUNT AND CHARACTER OF INSTRUCTION.

COURSES OF INSTRUCTION FOR 1889-90.

Instructors.	Subjects.	Exercises per week.	No. of students examined.
	FIRST CLASS.		
Prof. Dwight	Descriptive Anatomy	Three.	99
Asst. Prof. M. H. Richardson	Practical and Applied Anatomy	Three, November till May.	
Drs. Mixter, Conant, & Munro	Practical Anatomy, Recitations, and Exercises in Dissection	Six, November till May.	
Asst. Prof. C. S. Minot and Dr. Quincy	Laboratory Exercises in Histology	Two, till May.	
Asst. Prof. C. S. Minot	Embryology	Eight Lectures.	
Dr. J. W. Warren	Systematic and Experimental Physiology	Four.	86
Dr. J. W. Warren	Laboratory Exercises in Experimental Physiology	November till May.	
Prof. Wood	Medical Chemistry	Two, second half-year.	
Prof. Hills	General and Analytical Chemistry	Two, with ten additional Exercises	76
Prof. Hills, Drs. Harrington and Worcester	Practical Exercises in the Laboratory for General Chemistry	Five.	
Dr. Harrington	Hygiene	Twelve Lectures and twelve Demonstrations.	
Dr. Harrington	Materia Medica with Practical Demonstrations	Two, second half-year.	87
	SECOND CLASS.		
Prof. Dwight	Topographical and Advanced Anatomy	One.	100
Asst. Prof. M. H. Richardson	Practical and Applied Anatomy	Three, November till May.	
Drs. Mixter, Conant, & Munro	Practical Anatomy, with Exercises in Dissection	Five, till May.	
Prof. Wood	Medical and Toxicological Chemistry	Two, first half-year.	80
Prof. Wood and Dr. Emerson	Practical Exercises in Laboratory for Medical Chemistry	Five.	
Prof. Fitz	General Pathology and Pathological Anatomy	Two.	109
Prof. Fitz	Special Pathological Anatomy, with Demonstrations	Two.	

SECOND CLASS. — (CONTINUED.)

Drs. Whitney and Gannett	Laboratory Exercises in Pathological Histology	Two.	
Prof. Fitz and Dr. Gannett	Practical Instruction in Performing Autopsies	Throughout the year.	
Profs. Shattuck and Mason, & Drs. Garland & Vickery	Clinical Medicine, including one weekly conference	Seven.	
Drs. Garland, Gannett, and Withington	Practical Instruction in Auscultation and Percussion	Six, first half-year.	
Dr. Cutler	Recitations in Theory and Practice	Two.	
Prof. Knight	Laryngoscopy	Six, first half-year.	
Dr. Burrell	The Application of Bandages and Apparatus	Six, October till January.	
Profs. Cheever and Warren	Clinical Surgery	Two.	
Prof. Porter	Clinical Surgery	Three.	
Asst. Prof. F. H. Williams	Therapeutics	Three.	104
Asst. Prof. Rotch	Paediatrics	Two, for two months.	

THIRD CLASS.

Prof. W. L. Richardson	Theory and Practice of Obstetrics	Two.	97
Dr. C. M. Green	Recitations in the Theory and Practice of Obstetrics	One.	
Dr. C. M. Green	Operative Obstetrics	Twelve practical Exercises.	
Drs. C. M. Green, Reynolds, and Townsend	Practical Instruction in Clinical Obstetrics	Throughout the year.	
Prof. Minot	Theory and Practice of Physic	Two.	91
Profs. Shattuck and Mason, & Drs. Garland & Vickery	Clinical Medicine, including one weekly conference	Seven.	89
Prof. Cheever	Surgery	One, October till January; Two, January till June.	86
Prof. Warren	Surgical Pathology	Two, October till January.	
Prof. Cheever	Clinical Surgery	Two.	
Prof. Warren	Clinical Surgery	Three.	

COURSES OF INSTRUCTION FOR 1889–90. — (CONTINUED.)

	THIRD CLASS. — (CONTINUED.)		
Prof. Porter	Clinical Surgery	Four.	72
Prof. Porter	Surgical Anatomy and Operative Surgery	Twice a week in March and April.	
Prof. Porter, Asst. Prof. M. H. Richardson, and Drs. Mixter, Conant, Munro, and Monks	Operative Surgery	Fifteen practical Exercises.	
Prof. Williams	Diseases of the Eye	Two, first half-year.	1
Prof. Williams	Clinical Ophthalmology	One, till January and after March.	
Prof. White	Diseases of the Skin	One.	
Prof. White	Clinical Dermatology	One.	
Prof. Baker	Gynaecology	One.	4
Prof. Baker	Clinical Gynaecology	Two, first half-year.	
Dr. Davenport	Clinical Gynaecology	Two, second half-year.	
Dr. Post	Practical Diagnosis and Treatment of Syphilis	One.	
Profs. Blake and J. O. Green	Practical Diagnosis and Treatment of Diseases of the Ear	One, January till April.	2
Prof. Blake	Anatomy, Physiology, and Diseases of the Ear	Two, for two months.	
Asst. Prof. Rotch	Practical Diagnosis and Treatment of Diseases of Children	Two.	77
Dr. Putnam	Practical Diagnosis and Treatment of Diseases of the Nervous System	One.	
Dr. Fisher	Mental Diseases	Two, second half-year.	
Asst. Prof. Draper	Legal Medicine, with Demonstrations	Two, first half-year.	1

FOURTH CLASS.

Prof. Fitz	Clinical Medicine	One, for one month.	
Dr. Garland	Clinical Medicine	One, for six months.	
Dr. Gannett	Clinical Medicine.	One, for seven months.	
Dr. Vickery	Clinical Medicine.	One, for three months.	
Prof. Porter	Clinical Surgery	One, for four months.	
Prof. Warren	Clinical Surgery	One, for two months.	
Drs. Gay and Watson	Clinical Surgery	Two, for two months.	
Dr. Burrell	Clinical Surgery	Two, for three months.	
Prof. Porter and Dr. Monks	Operative Surgery	Practical Exercises.	8
Dr. Bradford	Orthopedic Surgery	Two, for two months.	
Prof. W. L. Richardson	Clinical Obstetrics	Two, for five months.	12
	Operative Obstetrics	Practical Exercises.	17
Prof. Williams	Clinical Ophthalmoscopy	Two, for three months.	5
Dr. Wadsworth	Ophthalmoscopy	Two, for four months.	
Prof. White	Dermatology	Two.	5
Dr. Tilden	Clinical Dermatology	Two, for three months.	5
Asst. Prof. Baker and Drs. Davenport and Strong	Clinical Gynaecology	Two.	13
	Operative Gynaecology	Ten exercises.	
Dr. Doe	Clinical Gynaecology	One, for four months.	
Asst. Prof. Rotch	Diseases of Children	Two, for three months.	17
Drs. Walton and Knapp	Diseases of the Nervous System	One, for four months.	
Dr. Fisher	Mental Diseases	Two, for four months.	1
Dr. Cowles	Mental Diseases	One, for three months.	
Prof. Knight	Laryngology	Three, for three months.	1
Profs. Blake and J. O. Green	Otology	Three, for four months.	1
Asst. Prof. Draper	Legal Medicine	Two, first half-year.	1
Dr. Harris	Legal Medicine	Demonstrations.	

Chemistry. — The Professor of Chemistry has been engaged in investigating the elimination of arsenic in cases of chronic poisoning by arsenic, and also in studying the use of various menstrua for the restoration of dried bloodstains in connection with medico-legal work. The latter subject it is intended to pursue in the direction of photo-micrometry during the coming year.

Professor Hills has continued his work on the post-mortem imbibition of poisons mentioned in the last report, and Dr. J. J. Putnam has, through the kindness of Miss Lucy Ellis, been enabled to continue his investigation into the frequency with which lead and arsenic are to be found in the urine.

Pathology. — Dr. W. F. Whitney and Alexander Burr, M.I.T., Inspector of the City Board of Health, have made a study of the diseases found among the animals slaughtered at the Brighton Abattoir. Their reports have been printed in that of the Boston Board of Health.

Dr. J. T. Bowen has studied the histological changes found in Keratosis Follicularis. His investigations are embodied in the paper on this subject published by Professor J. C. White. He has also made a study of Cutaneous Tuberculosis, the results of which are to be published in the Journal of Cutaneous and Genito-Urinary Diseases.

Dr. F. B. Mallory has investigated the pathology and pathological anatomy of certain abnormalities of the lower end of the trunk. His graduation thesis was based upon these investigations, and was entitled "Congenital Sacro-Coccygeal Depressions, Sinuses and Dermoid Cysts." The Faculty recommended its publication.

Mr. George L. Kingsley began a study of the pathological histology of extirpated ovaries. His premature death from diphtheria, while interne at the Massachusetts General Hospital, closed a work which was sure to have been carefully and thoroughly performed. He was a man of marked ability and promise, and his death is a distinct loss.

Bacteriology. — Drs. Ernst, Peters, Frothingham and Jackson have been conducting, in behalf of the Massachusetts Society for Promotion of Agriculture, a series of experiments as to the infectious nature of the milk of tuberculous cows, and of milk as retailed in Boston. Many specimens from the various hospitals and private physicians have been brought to the laboratory for examination and diagnosis.

Dr. Stephen A. Martin has been investigating the biological characteristics of vaccina in calves; as reported at Washington, he has obtained a mixed culture which produced vaccinia on inoculation.

Dr. J. Amory Jeffries has investigated an epidemic of hog cholera

FOURTH CLASS.

		Ophthalmology.		Dermatology.		Gynæcology.		Clinical Obstetrics.		Diseases of Children.		Diseases of Nervous System.		Mental Diseases.		Legal Medicine.		Otology.		Laryngology.		Operative Obstetrics.		Operative Surgery.		Bacteriology.		Hygiene.	
			%		%		%		%		%		%		%		%		%		%		%		%		%		%
1886	Passed	10		11		10				10		10		10		8		11		11				12					
	Rejected	0	0	1	8	0	0			0	0	0	0	0	0	0	0	0	0	0	0			1	7				
	Total	10		12		10				10		10		10		8		11		11				13					
1887	Passed	12		12		8				11		11		8		11		9		11				9					
	Rejected	4	25	0	0	5	38			0	0	1	8	6	42	0	0	1	10	0	0			2	18				
	Total	16		12		13				11		12		14		11		10		11				11					
1888	Passed	2		3		3				0		0		3		2		2		3				0					
	Rejected	1	33	0	0	0	0			0	0	0	0	0	0	1	33	1	33	0	0			0	0				
	Total	3		3		3				0		0		3		3		3		3				0					
1889	Passed	3		6		8		4		9		1		0		2		0		3		9		1					
	Rejected	0	0	0	0	0	0	2	33	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0				
	Total	3		6		8		6		9		1		0		2		0		3		9		1					
1890	Passed	2		5		13		12		15				1		1		1		1		16		6		1		1	
	Rejected	3	60	0	0	0	0	0	0	2	11			0	0	0	0	0	0	0	0	1	6	2	25	0	0	0	0
	Total	5		5		13		12		17				1		1		1		1		17		8		1		1	

THE DENTAL SCHOOL.

To the President of the University:

Sir, — I have the honor to submit the following report upon the Dental School for the year 1889–90: —

The number of students was thirty-four, divided as follows: In the class of the third or graduating year, sixteen; in the second year, ten; and in the first or Freshman year, eight. Of the graduating class one was a student of the corresponding class of last year who then failed to pass, but who was more successful this year. The number of students who were graduated at this year's Commencement was sixteen — fifteen from the third-year class, and one a student of a former year who received his degree with this class.

The subjects and manner of instruction have been substantially the same as in former years. Didactic and clinical instruction have been given by Professors and Instructors, the former in the lecture-rooms, the latter chiefly in the Infirmaries. The students of the first year have been taught as usual in the Medical School by its Professors, receiving in the subjects of Anatomy, Physiology, and Descriptive Chemistry, the same instruction as the Medical Students and passing the same examinations. Such of these students as desired have also been taught in the Operative department in the rudiments of practical Dentistry. The students of the second and third years receive their instruction in the Dental School by lectures illustrated by specimens and drawings, and clinical teaching in the practical branches of Dentistry in the Infirmaries of the Operative and Mechanical departments by practical work in the mouths of patients. As the prices for dental work in the School are merely nominal, there is an unlimited supply of persons who are willing to permit students to work for them under the supervision of skilled instructors.

The instruction in strictly dental subjects given in the Dental School by its Professors and Instructors has been in Dental Therapeutics and Materia Medica, Operative and Mechanical Dentistry, Oral Anatomy and Pathology, Orthodontia or the Regulating of Teeth, and the Mechanical Treatment of Cleft Palates, Fractures and other lesions of the Jaws.

The amount of didactic instruction in these subjects has been as follows: —

Instructors.	Subjects.	Number of Lectures.
Prof. Brackett	Dental Therapeutics	35
" Fillebrown	Operative Dentistry	30
" Chandler	Mechanical Dentistry	28
Instructor Briggs	Materia Medica	25
" Stanton	Oral Pathology and Anatomy	28

Drs. Wilson and Grant, Instructors in Orthodontia and Cleft Palate treatment, having resigned, and none others having been appointed in their places, the instruction in these subjects naturally fell to the Professors of Operative and Mechanical Dentistry, respectively. A very interesting and instructive evening lecture was also given by Dr. Stanton, as a part of his course, illustrating the development of teeth from the embryo to the period of eruption, by means of some seventy lantern slides.

The Professors of Operative and Mechanical Dentistry, in addition to the time given to their lectures, have each devoted at least one hour a week to clinical teaching in their respective departments.

During the year the title of Dr. Brackett's professorship was changed to the Professorship of Dental Pathology, and Dr. Briggs was made Assistant Professor of Dental Materia Medica and Therapeutics.

Dr. Eugene H. Smith was appointed Instructor in Orthodontia, but no one has yet been named for the Instructorship of Cleft Palate Treatment, &c., a subject of growing interest and importance, which, at present, can receive no sufficient or satisfactory elucidation in the School. Drs. Cooke and Hopkins at the close of the year declined renomination.

From the steady growth of the number of students our quarters are becoming less and less adequate for proper instruction in the practical branches of our profession. In both Infirmaries the students are so crowded that they are unable to work to advantage, not only for want of "elbow room," but especially for want of proper light. In the Operating room particularly, where the best light is absolutely requisite for good work, the space is filled with chairs, in three or more tiers, many at a considerable distance from the windows, the sources of light, rendering it impossible in the short and dark afternoons of the winter season (which are a majority of the afternoons of the School year) to work to advantage, or sometimes to work at all. The School has from its inception been handicapped by poverty, and, though it is now happily out of debt and this burden is off of the shoulders and hearts of its officers, the increasing numbers render imperative our call for "more room — more light."

THOMAS H. CHANDLER, *Dean.*

THE BUSSEY INSTITUTION.

To the President of the University:

Sir, — I respectfully submit the following report upon the Bussey Institution for the year 1889–90: —

Stated courses of instruction in Agriculture, Horticulture, Botany, Entomology, and Agricultural Chemistry were given by Messrs. Motley, B. M. Watson, Kidder, Tuttle, and Storer. Three students attended the exercises.

As in the preceding year (1888–89), so in the present (1889–90), numerous repairs were put upon the buildings, to make good the depreciations which had occurred in times of pecuniary distress. The farm prospered under the superintendence of Mr. Northway. A very large crop of hay was harvested and a considerable amount of work was done upon the task of bringing the estate into a neat and presentable condition, by the judicious application of its own resources, without trenching in any way upon the income of the School.

Gifts of harnesses for farm use were received from Dr. D. H. Storer, and of agricultural journals from Mr. B. M. Watson, Jr., and from Dr. D. D. Slade.

F. H. STORER, *Dean*.

THE VETERINARY SCHOOL.

To the President of the University:

Sir, — I beg to submit herewith the eighth annual report of the School of Veterinary Medicine: —

Of the six members of the third class, all presented themselves for the final examinations, in which all but one were successful. There were six graduates; four from the third class, one from the first class (who had fulfilled his entire time of study), and one whose age had previously prevented him from receiving the diploma. The remaining successful member of the third class, being of less than the required age, was not graduated. Of the two members of the second class, one remains in the class, and one has left the School, having completed his three years of study. Of the twelve members of the first class one graduated, two advanced into the third, and four into the second class; three remain, and two have closed their connection with the School. Besides these, two who were Special Students last year in subjects of the first-year's course, have passed the examinations and entered the second class as regular students.

These figures show a steadily increasing patronage of the Hospital and Forge; in fact, the business is now so large that it is done with considerable difficulty in so small a place, and a serious question of expediency has been thrusting itself upon us for the last six months. I think, very decidedly, that the Hospital should be enlarged soon, if we are to go on without endowment.

Dr. Daniel Emerson, elected to the position of Resident Surgeon last year, resigned that office at the expiration of the time for which he was appointed, as he preferred the greater freedom of a private practice. Dr. Wilbert Soule has been chosen to fill the position.

Finances. — In addition to its own general expenses the Hospital has earned enough to pay a deficit of about $2605 in the account of the School; the entire salaries and wages of its officers and men; taxes upon one of the buildings; the interest, at 6%, upon the cost of buildings erected for the purposes of the School; the interest, at 6%, upon all advances made by Harvard University for former annual deficits created by the School; and a cash surplus of $388.35 — a total earning of $19,698.45 (almost $20,000), of which only $2395 came from the School.

In this division of my report for 1887–88, after showing a deficit of $1576.12, I said that the most desirable way of preventing anything of the sort in the future would be to make the buildings the absolute property of the School by endowment; or, failing this, among other things to be tried was, first, "to enlarge the Hospital staff at the risk of not increasing, proportionately, the earnings." In accordance with this recommendation the office of Resident Surgeon was created. So long as a good man can be kept in this place there need be no fear of a further deficit. If, with a proper resident surgeon, we can now have a larger Hospital, the income can be materially increased and a freer expenditure on the School will be possible.

CHARLES P. LYMAN, *Dean.*

THE LIBRARY.

To the President of the University:

Sir, — In leaving for a year's absence under a permission of the Corporation, I shall not be able to make up the usual Library statistics for the College year 1889–90, and have left it for the officers who usually assist me in these reports to append the necessary statements and tables.

Within a month of the close of the year I find it very apparent that the main lesson of our year's experience is a matter which has been pressed on our attention with renewed force.

Our funds are inadequate to meet the growing demand for books, and the nature of this demand is one that occasions serious consideration. The two functions of the University are to teach young men and to advance research. Both require books. Those necessary for the immediate objects of teaching are not numerous; but when with those objects we join the aims of the large community of specialists which is gathered about the University we encounter a problem in administering to their literary wants which is not without difficulties. In the change in the methods of study, not only of science but of every other department of learning, which has come over the present intellectual conditions of life, there is a greater community of interest among scholars everywhere than ever existed before. The rapid and broad interchange of thought which characterizes our life in general, placing no geographical limits to observation, is even more manifest in the pursuit of knowledge and the deductions which spring from records of knowledge. Every field of information is mapped in its own journals and in the publications of societies formed for the furtherance of specific investigation. This periodical literature is of the first necessity in research. It keeps every specialist abreast of the progress in his own department, warns him of fields preëmpted by others, and economizes force by sub-dividing the aims of study. It has therefore become necessary for the Library to increase rapidly of late years this class of literature, and there is no sign of any abatement in that increase. With all this enlargement on our own shelves, we can offer to the specialist but a small portion of all the contemporary affluence of such help. What we do offer seems necessary, and it does not appear that we can abridge the extent of it without seriously impairing the advantages which the Library ought to offer to the specialists of the University. The total cost of supplying this periodical and serial literature is, however, great. It entails also a large cost for binding, and this is increased beyond what we would naturally pay for binding from the fact that we do not get the advantage of having the binding done in the mass by the publishers of these works, and that we have to do the greater part of it in America, at about double the cost of binding in Europe. All these periodicals and serials together cause an annual charge at present of about $5000, which we have to carry forward from year to year, with a tendency to increase.

The drawbacks on this kind of increase are obvious. It stocks our shelves with a mass of publications which convey preliminary and tentative results, some to be superseded by the sifting and enlarging processes which produce separate monographs or books in the ordinary acceptation of that word. There is, of course, a tendency in every publication to fall behind advancing knowledge, and the literature of every age, so far as it depends on the condition of knowledge, becomes antiquated in time. Monographs, however, become antiquated less rapidly than the serials out of which they grow; and, as offering a certain compression of knowledge, they are for longer periods more serviceable than periodical issues. Thus it is that the mass of this piecemeal contemporary publication becomes after the lapse of years mainly serviceable as sources of the history of knowledge, rather than as embodiments of the last results of investigation. In this way the more we use our money for periodicals and serials the more we diminish our capacity for buying the solidified results of knowledge which is found in monographs, using this term in a broad sense.

The experience of the past years has made this more apparent than ever. I assume that a reduction of our periodical and serial list to any great extent is not desirable, and I know that the cost which that list entails prevents our buying as much of the more lasting literature of books as we ought to buy to keep the Library effective.

The obvious relief of this situation is an increase of our book funds. That will of necessity compel the raising of more money to provide shelf-room, since we have nearly reached the limit of the present accommodations for the storing of books.

I again refer you to the details of the year's work in the appended statements of other officers of the Library.

JUSTIN WINSOR, *Librarian.*

JULY 1, 1890.

Three numbers of the *Bulletin of Harvard University* have been issued under the immediate charge of the Librarian during the past year. Of the *Bibliographical Contributions*, also issued separately by the Library, five have been published, namely: No. 34, *The Dante Collections in the Harvard College and Boston Public Libraries*, by W. C. Lane, Assistant Librarian; No. 35, *Notes on the MS. of Shelley in the Harvard College Library*, by George E. Woodberry; No. 36, *The Treat Collection on Ritualism and Doctrinal Theology*, by W. C. Lane, Assistant Librarian; No. 37, *Bibliography of Hogarth*, by Frank Weitenkampf; No. 38, a *Sixth List of Publications of Harvard College and its Officers*, 1888–89, by W. H. Tillinghast, Assistant Librarian.

The accessions to the University Library for the year, and the present extent of the various departments, are as follows: —

Principal Departments.	Volumes added.	Present extent in	
		Volumes.	Pamphlets.
Gore Hall (College Library) .	13,365	281,916	267,092
Law School	753	25,251	3,245
Scientific School	30	2,738	800
Divinity School	506	21,576	3,852
Medical School	169	2,008	. . .
Museum of Zoölogy	683	21,260	13,294
Astronomical Observatory . .	336	6,752	6,891
Botanic Garden	124	5,516	3,455
Bussey Institution	15	3,100	1,010
Peabody Museum	70	1,138	1,224
Totals	16,051	371,255	300,863

If to this total of 371,255 volumes be added the 4321 volumes of the permanent collections in the laboratories and class rooms, we have a grand total of 375,576 volumes for the University Library.

The Whitney Library of Geology, a component part of the collection in the Museum of Zoölogy, is not yet included in the count of the Museum Library; while on the other hand no deduction has been made in the general library for volumes parted with on exchange account.

The present extent of the laboratory and class-room libraries is:

	Permanent.	On Deposit.	Totals.
Laboratories.			
Chemical	567	. .	567
Zoölogical	138	. .	138
Geological	11	. .	11
Meteorological	56	. .	56
Botanical	440	. .	440
Physical	. .	323	323
Class-Rooms.			
Greek	318	. .	318
Latin	43	. .	48
United States History	745	. .	745
Political Economy	530	. .	530
Mathematics	184	136	320
French	539	. .	539
English	28	. .	28
Sanskrit	22	. .	22
German	289	. .	289
Social Questions	416	. .	416
Totals	4,321	459	4,780

An assistant is sent from the Central Library every week to examine the shelves of these libraries by the shelf-lists, and the titles of missing books are reported at once to the officer of instruction in immediate charge of the library where such loss or misplacement has been discovered. Temporary loans of books from Gore Hall are made to these libraries to facilitate the instruction of the several departments. In 1888–89 six of these libraries were open evenings, but in 1889–90 two only were thus available for use when Gore Hall was closed. Towards the close of the year the formation of a class-room library in Philosophy was begun, and a good number of volumes have been bought.

Of the accessions to the Gore Hall Collections there were added by gift 7633 volumes and 9529 pamphlets; and the accessions also include 838 volumes of bound serials (received in parts), and 672 volumes made by binding pamphlets.

The accessions of recent years to the University Library (excluding the laboratory and class-room libraries) have been reported as follows: —

In 1879	10,389 vols.	In 1885	14,558 vols.
" 1880	7,247 "	" 1886	9,191 "
" 1881	9,804 "	" 1887	11,924 "
" 1882	9,192 "	" 1888	16,468 "
" 1883	9,818 "	" 1889	12,253 "
" 1884	12,360 "	" 1890	16,051 "

The following tables show the use of books at Gore Hall in 1889–90 as compared with previous years: —

	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
1. Books lent out . .	48,655	52,322	60,195	62,861	65,639	68,892	74,906
2. Used in the building	9,047	9,433	8,816	12,041	15,267	14,299	17,203
3. Overnight use of reserved books .	11,399	13,791	18,505	20,052	20,360	21,802	24,989
Total (excluding No. 3, which is incl. in No. 1)	57,702	61,755	69,011	74,902	80,906	84,191	92,109
Officers of instruction reserving books .	48	48	56	56	. .	. .	. .
No. of books reserved	4,782	5,230	5,840	6,280	6,549	5,848	6,215

It is no longer practicable to indicate the number of instructors reserving books, since the classes in several courses are now divided among more than one instructor, and we have no means of knowing whether they all make use of the system.

The extent of the number of books reserved — of whose hall-use no record is kept — has a tendency to decrease the number of volumes used in the building, of whose use record is made. In addition to the books reserved by instructors, now amounting to 6215 volumes, there are in the reading-room 1820 volumes carefully selected for students' reading by the instructors in their several departments. Of these, 1308 are English, 349 French, 119 German, and 44 Italian. The use of these books is not governed by the restrictions applied to reserved books, but the books may be taken out as other books are.

In the Delivery Room are 5424 volumes, all of which are accessible to students. Of these, 3146 volumes are bound periodicals which may be taken out as seven-day books, and 2278 volumes are for reference only, comprising dictionaries, encyclopædias, and the most useful books of reference in all departments.

Of the 1329 books sent to the "Annex" during the year, 286 were from the class of "reserved books," while the proportion last year was 299 out of 1531. The number of separate students of the "Annex" who borrowed books during the past year was 84 — a large increase over the number during recent years.

SUNDAY USE.

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
Sundays open	36	36	37	37	37	37	37	37
Persons using	2,268	2,448	2,631	2,842	2,880	2,894	3,024	3,089
Average . .	63	68	71	76	77	78	81	83
Highest no. .	92	95	105	108	118	106	108	118

The following table shows for a series of years the use made of "Admission-Cards," by which students have access to special classes

ADMISSION—CARDS.

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
History . . .	46	45	52	68	74	71	81	53
Science . . .	16	18	12	14	12	14	9	6
Art (incl. Music)	14	12	14	16	13	16	24	19
Literature . .	42	37	42	49	62	54	27	32
Classics . . .	36	42	53	52	47	42	24	22
Philosophy . .	5	6	8	9	8	9	16	9
Theology . .	3	8	9	12	15	11	6	4
Polit. Economy	5	8	12	44	64	49	25	13
Total students	167	176	202	264	295	266	212	158
Times of use .	3,340	3,520	4,020	5,820	7,375	7,980	8,390	6,490

of the books for investigation at the shelves; the falling off in the past year is due partly to the removal of the United States Documents to the Reading Room, where they are accessible without the use of a card, and partly to intentional restriction of the privilege — a privilege which operates directly to the disadvantage of other users of the Library, and should therefore be granted with circumspection.

The College teachers who have students under instruction in the methods of research are still given such facilities as the Library building affords for the accommodation of their classes; but the advantages of the building are in this direction far from what they should be, and some checks upon this kind of research among the students are necessarily imposed.

STUDENTS' USE OF THE LIBRARY.

STUDENTS OF	1885–86.		1886–87.		1887–88.		1888–89.		1889–90.	
	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.	Whole No.	No. taking books.
Divinity . . .	25	25	20	20	16	16	26	26	36	36
Law	154	136	180	108	215	175	217	138	254	151
Scientific . .	22	18	14	10	20	18	35	21	65	37
Resident Grad.	64	62	56	54	83	76	85	74	93	81
Senior Class .	232	214	239	231	237	234	214	206	278	254
Junior Class .	236	228	238	215	214	209	252	249	244	232
Sophom. Class	232	216	224	206	281	234	264	238	282	253
Freshm. Class	258	201	280	195	295	229	309	215	323	215
Sp. Students .	. .	. .	. .	. .	. .	. . .	. .	. .	144	100
Totals . .	1231	1100	1251	1039	1331	1191	1402	1167	1719	1359

The percentage of users among the undergraduates during recent years is given in the following table: —

	1879–80.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
For Seniors . .	88	90	90	92	96	99	97	91
For Juniors . .	83	88	93	96	90	98	99	95
For Sophomores	83	85	86	93	92	94	90	90
For Freshmen .	65	80	80	78	69	77	69	67

Fourteen years ago* only 57% of all the College students used the Library. In the last year, of the 1127 undergraduates only 173 failed to borrow books, and some of these probably used the reserved books in the Reading Room. The libraries of the class-rooms and laboratories, as well as those of the students' clubs, doubtless provide reading, special as well as general, for a considerable number of undergraduates. These additional resources very likely account for the slight falling off of users during the past year; though, as is shown in a previous table, there has been the customary increase in issues of books.

---

* See table in previous reports.

These statements do not cover the use of "reserved books." Nor is there any record of the use made of the 508 periodicals, current numbers of which are on file in the Reading Room.

The number of persons registered and entitled to take books away from the Library building is as follows: —

Students	1,491
Instructors	127
Others	486
Total	2,104

Mr. Frank Carney, who under Mr. Tillinghast has charge of the shelves, reports that 5513 volumes have been permanently placed in the new stack since the last report, making 115,807 so placed out of the volumes constituting the Gore Hall collection. Until the original Gore Hall is reconstructed, there can be no further progress made in reclassifying the Library.

Nearly all the space available for the convenient shelving of books has now been used. When this limit is reached, the question of providing room for the additions to the Library will become grave, since recourse must be had to expedients directly tending toward complexity, and decrease of light. The accessions of the past year alone would, if placed together, completely fill nine of the rows in the stack.

Mr. Carney verified the shelf-lists of the classifications in the stack, between the 26th of June and the 25th of July, showing about 150,000 volumes. The number of volumes which failed to be accounted for was 93. Of those reported missing in previous years 18 were found in their places, having been silently returned during the year. About half this number were returned in June. Of books reported missing since 1883 there are still 290 unaccounted for; 141 having disappeared from the reserved books, and 149 from the stack. Of these 93 unaccounted-for volumes of the year just closed about one half have disappeared from the books of reference, reserved books, and other collections exposed to the handling of all frequenters of the Library, the other half having disappeared from the shelves to which only the staff of the Library, officers of the College, and a limited number of other persons have access.

In the stack, particularly in those sections most frequented by holders of "admission-cards," many cases of disarrangement were discovered, 200 books being found on wrong shelves, and 283 shelves more or less disarranged. Such misplacement always causes delay in finding books, and in the case of books placed on a wrong shelf is equivalent to actual loss. It is clear that the facility of access to the shelves now granted brings with it results which in the interest of the greater number of users should be counteracted.

Mr. Lane, Assistant Librarian, furnishes the following report of the work of the Catalogue department: The total number of titles catalogued for the College Library in Gore Hall during the year (1889–90) has been 7692, and for the various department and class-room libraries 1438. Owing to the unusually large number of books received in the course of the year it has been impossible to take up systematically any of the 11,000 titles catalogued some years ago on the author catalogue only and now waiting to be incorporated into the subject catalogue. The Arabic collection brought home by Professor Toy and the Sanskrit books brought by Professor Lanman, together with the Sanskrit manuscripts presented by Mr. Fitz Edward Hall, are also still uncatalogued, though accessible for use if needed. In addition to these there are about 4700 volumes now (Oct. 1) waiting to be catalogued, almost all very recent accessions, beside 224 volumes of Italian manuscripts received in June from the Massachusetts Historical Society. This MS. collection, however, consisting of the words of some 1567 Italian operas, sacred dramas, cantatas, prologues, etc., need not draw heavily on the time of the Catalogue department, as it is accompanied by a volume of contents and index.

The 4700 volumes, however, of recent uncatalogued accessions is far in excess of the number usually on hand at this time of year (about 2000), and makes an addition to the cataloguing staff necessary.

The work of the past year may be compared with the work of other years as follows: —

	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
1. Gore Hall cards prepared	21,524	30,968	32,580	29,229	23,696	21,256	24,384
2. Titles catalogued for departments . . .	. . .	. . .	957	1,021	1,291	1,721	1,438
3. Volumes received in Gore Hall	9,879	12,442	6,730	9,108	10,885	9,045	13,140
4. Approximate hours' work of the assistants of the catalogue department.	24,241	22,231	23,020	22,113	20,696	18,293	18,831

The use of printed cards in the public card catalogue has been continued on the same lines and in about the same proportion as in previous years.

Inasmuch as these cards are made by using the type of the *Bulletin*, it is only those titles which are entered in the list of accessions there, that is, nearly all the recently published books and pamphlets but only the more extensive and important works of earlier date, that can be printed on cards. All others, or about half the accessions of the year, are still catalogued on written cards.

It has been the practice for some years to take a copy of the accessions list in the successive Bulletins, and, by cutting it up and pasting the titles separately into a large blank book, to make a consolidated catalogue in one alphabet of all the books which have been noted in the Bulletins. In this way two large volumes have been filled containing the titles of books received from 1876 to 1889 inclusive. Instead of going on with a third volume for future additions, we are trying a new variety of card catalogue on the same general plan as that of the University of Leyden and of the Society Library in New York. The peculiarity of these catalogues is that the cards or slips, instead of being kept in drawers, are bound together like the leaves of a book in handy little volumes. Larger slips of stout manilla paper (7 by 4 inches) are used in place of the usual cards, and a single copy of each title is printed on these slips at the same time that the cards are printed. A simple form of binder to fasten the slips together in books of convenient size has been adopted, and this new beginning of a catalogue, at present in twenty-five volumes, was placed on a shelf in the reading-room in August. An opinion of its usefulness or of what it may lead to can be given after a longer trial better than at present.

The Index to the Subject Catalogue has made better progress than during the previous year. 128 pages are now printed, and the manuscript is finished nearly through the letter S. There is every reason to expect that it may be completed in the course of the next winter.

The work of the Ordering department, in charge of Mr. Tillinghast, is shown in the following statement: —

The income of the Library funds available for the purchase of books in the past year was considerably smaller than usual, owing to a general reduction in the rate of interest, combined with heavy purchases during 1888–89: consequently it was necessary to reduce materially the number of orders sent in the spring of 1890. Notwithstanding this precaution, the income for 1890–91 was diminished by heavy payments early in the year, and it seemed advisable to increase the unpledged balance by countermanding all orders (excepting continuations) which had been sent before January 1, 1890. This was done in August, and the cancelled orders have been placed by themselves, in order that the instructors who handed them in may have an opportunity of examining them and indicating which, if any, they wish renewed.

At the close of the Library year the estimated cost of orders then out (including "continuations," reckoned at $6191) was about $8377, and it was expected that about $4327 of these would come in, to be paid for during the coming year. We have an income for the next year of about $16,500; against this amount, reduced by heavy payments early in the year, must be set off about $7127 (that is: orders out, $4327; periodicals and binding, $2400; freight, $400), leaving a free balance of not much over $4600. It is further to be considered that some of the items included in our annual book income are funds with such specific objects that they must be left out of view in providing for general purchases.

The following table contains a summary of our financial condition during six years: —

	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.
Income for books *	$17,570	$16,245	$19,341	$20,407	$19,871	$16,682
Spent	16,533	13,923	14,549	16,062	17,347	15,172
Balance	1,037	2,321	4,791	4,345	2,534	1,510
Appropriation . .	17,500	none.	17,500	19,000	20,050	15,480
Unpledged balance	6,396	7,180	12,032	12,080	11,238	5,672

During the year 1888–89 we sent out orders the estimated cost of which was about $7500; during the past year they have amounted to $6276. This amount was divided among agents as follows: Domestic, $895, against $1185 last year; English, $2043, against $2550; French, $1234, against $910; German, $1401, against $2442; Italian, $200, against $325; Scandinavian, $52, against $106.

The following table shows the proportions of certain items to income and appropriation: —

---

* The items of income include unexpended balances of the previous year.

Year.	Proportion of appropriations to income.	Proportion of liabilities to appropriations.	Proportion of money pledged for annual continuations, etc., to appropriations.
1880-81	.89	. .	. .
1881-82	.81	.76	.44
1882-83	.91	.70	.29
1883-84	1.04	.87	.47
1884-85	.99	1.01	.63
1885-86	none made	.87 (to income)	.55 (to income)
• 1886-87	.88	.82	.41
1887-88	.93	.78	.42
1888-89	1.01	.81	.43
1889-90	.92	1.11	.71

The following table indicates for five years past the extent and variety of orders dealt with by the Ordering department, and shows that 14,000 slips are arranged and kept in mind in the daily work of those in charge of this department: —

Order slips on hand October 1.	1886.	1887.	1888.	1889.	1890.
Book orders out	1,487	1,539	2,112	2,875	1,242
Continuation orders out	1,637	1,819	1,951	2,163	2,272
Total active orders .	3,124	3,358	4,063	5,038	3,514
Cancelled orders. . . .	6,000	6,400	6,800	7,200	7,675*
Deferred orders	531	488	541	533	1,488
Countermanded orders .	. .	. .	. .	. .	943
Slips for reference use .	110	136	124	130	234
Slips of little value . . .	76	76	76	76	76
Grand total	9,841	10,458	11,604	12,977	13,930

The estimated cost of continuations, which is a fixed liability for our book funds, — though only about one-half of the charges is likely to be actually incurred each year, owing to the irregularity of such serials, — has been growing rapidly of late years. It has risen from a liability of $2008 in 1880–81 to $6079 for last year, and $6191 for the year just closed, an increase of 300% in eight years. There are 2274 order-slips for continuations now in the order-drawer, which are

* This number results from an actual count; the numbers of cancelled orders given for earlier years rested on estimates, and, proving exaggerated, have been proportionally reduced.

divided among our agents as follows: Trübner, 460; Reinwald, 369; Harrassowitz, 940; all others, 505.

There were received during the year at Gore Hall 4404 slips of titles of books which users of the Library thought should be bought. Of these 819 were found to be already in the Library. The total number of orders finally sent forward to agents was 2505, ranging from 38 in April, 1890, to 496 in March, 1890. Of this total of 2505 there was urgency for promptness in despatching orders in 128 cases, and in these cases the orders were sent either on the day of receipt or on the following day.

Our two principal American agents have procured for us within the year about 70% of the books we have ordered. Our three principal foreign agents, in London, Leipzig, and Paris, procured for us within the year not far from 83% of our orders. Within the last few years there has been a considerable improvement in the assiduity of our principal agents. In 1883-84 they procured 64% of our orders; this last year the same agents secured 83%. Our French agent has carried out a revision of his continuation list, and supplied us with a large number of volumes and parts which should have been in our hands much earlier; it is hoped that supply will now keep pace with publication. It appears that we receive yearly about 9 English shipments, 7 German, 5 French, 3 Italian, and 1 Scandinavian.

Mr. Henry C. Badger, Curator of Maps, has made the following report: —

The only noteworthy interruption of the map cataloguing was the stamping, numbering, and placing of our small collection of Plates in portfolios. The complete Index of authors and subjects prepared for those will be found useful. It is appended to the small volume giving the list of Plate portfolios.

The cards for the maps in portfolios have been prepared up to portfolio 4000. This covers about 300 occupied portfolios for the year, and something more than a thousand so far altogether.

Mr. John H. Storer, Curator of Coins, reports satisfactory progress in the work of cataloguing the coins. A few new coins have been added during the year, bringing the number of modern specimens up to nearly 1600.

In view of the strong interest in behalf of a new Reading Room that has developed among students and graduates since Mr. Winsor's departure, that portion of his Report for the preceding year which depicted the evils of the present state of things, is here reprinted. The lapse of a year has but emphasized the statements.

THE HERBARIUM.

To the President of the University:

Sir, — The accessions to the Herbarium during the past year from American sources have been as follows: From various parts of the United States, over 1200 specimens; from Mexico, about 850 specimens, including the collections of Mr. C. G. Pringle in northern Mexico, which are especially rich in new and little-known species, and those of Dr. E. Palmer and Mr. T. S. Brandegee in Lower California; from Canada, 575 specimens from the collections of the Government Survey, of which the mosses (400 specimens) were obtained by purchase; from Porto Rico, 600 specimens of Sintenis' collection, by purchase; and from Bolivia, 670 specimens collected by Miguel Bang, also by purchase. There have been received through the kindness of foreign correspondents: from W. T. Thistleton Dyer, Director of the Royal Gardens at Kew, about 700 specimens, chiefly of Chinese, Tasmanian, and Brazilian origin; from W. Barbey, of Valleyres, Switzerland, 126 specimens of Dr. Schweinfurth's collection in Arabia Felix; from P. MacOwan, Director of the Botanic Garden at Cape Town, 300 specimens of South African plants; and from Baron Ferdinand von Mueller, of Melbourne, 240 species of Australian plants.

There has also been acquired by purchase, through the liberality of a few friends of the Herbarium, the large collection of American and foreign mosses forming the herbarium of the late Thomas P. James, of Cambridge, which contains many typical and rare specimens of our native moss-flora, and in this respect supplements largely the Sullivant collection of mosses already in our possession. Through the generosity of Mr. George C. Woolson, of Passaic, N. J., the Herbarium has received as a gift the entire botanical collections (with the exception of the grasses) of the late Dr. George Thurber, of Passaic, together with the right to select for purchase any desiderata from among the grasses, with their accompanying manuscript notes. As Dr. Thurber was for many years the highest authority in this country upon that order of plants, his herbarium became richer than any other in the grasses of the earlier collections made in our western and southwestern territories, and the opportunity to secure such of them as we do not already possess is of special importance. Notice has also been received from the executors of the late John Ball, Esq., of London, that a large portion of his herbarium, very rich and valuable in some directions, will be sent to this Herbarium for its benefit, and for such distribution among American institutions has shown are of most use to our students. This policy has led us to select largely the species which are exposed to the least risk of failure, and which can, in short, be cultivated cheaply. Hence we are less dependent than formerly upon differences in seasons.

It gives me pleasure to state that, although the aggregate number of species has been considerably reduced, the Garden maintains its attractiveness for our students, for the pupils of our public schools, and for the public. The attendants report that on Sundays and holidays the number of interested persons visiting the Garden is very large; the number this year being considerably larger than in previous summers. The interest has seemed to depend largely upon the more effective grouping of certain classes of plants, and upon the very fair success which has attended strenuous efforts to have the plants plainly labelled. In every effort to increase the efficiency of the Garden I have had the cordial coöperation of the Head-Gardener and of his first assistant. Their good judgment and energy make it perfectly safe for me to entrust the Garden to them under the direction of the Instructor in Botany, Mr. W. F. Ganong, during my coming year of absence.

The necessary repairs made on the houses and the greenhouses have been extensive and costly, but so thorough that little will need to be done during the coming year.

The enormous number of flowers and of plants required by the very large classes could not be supplied by the Garden unaided. The aid given by Mr. B. M. Watson, Jr., of the Bussey Institution, has been sufficient in every way. The specimens furnished by him have been generally good, and have been received in good condition. Certain modifications in providing the supply for the next year have been agreed upon, and the details of remuneration satisfactorily arranged.

The Garden has been able to supply a certain number of plants and flowers to the Society for the Collegiate Instruction of Women at a rate of compensation which simply covers the expense. There seems to be no reason why the arrangement should not be continued.

The numbers of students in attendance upon the different courses in Botany were as follows: —

Natural History 3	150
" " 7	16
" " 5	44
" " 11	3
Total	213

Certain sums of money previously announced as subscribed to the Botanic Garden and Botanical Museum have been paid during the last fiscal year, and are duly acknowledged in the report of the Treasurer.

the entire output of Blaschka's glass models of flowers and plants. The invoice received in the winter proved to be of even greater excellence than the previous shipments which had received such praise. The collection will be placed in the long room adjoining the main Exhibition Hall.

The work of arranging the specimens illustrating Economic Botany will not be undertaken for the present. Under the advice of Mr. Agassiz, the Curator of the Museum of Comparative Zoölogy, this work will be deferred until my return from the tropics. The very thorough treatment of the specimens in glass bottles and tight cases will, we hope, preserve them from material injury until their exposition. It seems no longer wise to withhold a declaration of the policy which I advocate in regard to the Museum of Economic Botany. It is my wish to make the collection an authoritative cabinet of type-specimens, to be described in an illustrated series of studies. No such work exists at present except in valuable fragments found widely scattered through journals of botany, pharmacy, and technology. Upon this important work of coördinating results already published with those which have been reached in our Museum some of our advanced students have already entered, and these original investigations are the forerunners of what we hope will be a contribution to a neglected part of our field. For a fund adequate for this publication an appeal will be made at some future time. I advocate placing in the Exhibition-room itself specimens which shall convey to the general public clear notions in regard to the sources of the principal matters obtained from the vegetable kingdom. In the department of woods comparatively little will be done by us, for this attractive branch of illustration belongs to the Museum of the Arnold Arboretum, and can be touched only lightly in the University Museum. The presentation of illustrations of types of the great classes and the subordinate groups of plants has hitherto been the despair of curators of museums. But the great skill of the Blaschkas, father and son, has enabled us to undertake this presentation in an effective way. Therefore the types will be fully presented in the Ware Memorial Room, while in the contiguous Exhibition Hall we can display authoritative specimens illustrating the products from the plants of each type. In this manner, an interesting exposition of the scientific and the popular sides can be satisfactorily assured. Lastly, in procuring additions for further illustration of Economic Botany, the policy which has been found advantageous in the Garden will be consistently pursued. Exchanges will be undertaken only on the basis of transferring desiderata. We shall be glad to send to others specimens which they want and which we can spare in made to substantially finish planting the Pinetum during the coming year. The Commissioners have placed under contract the grading of another long section of road at the other end of the Arboretum This is to be sub-graded and the slopes made during the autumn and early winter of 1890; and there is now a fair prospect that the whole system of city roads will be sub-graded and perhaps opened to the public in the course of the next three or four years.

No planting has been done during the year. All the trees that could be planted advantageously were planted several years ago; and without additional graded road-slopes there has been no opportunity to continue this work. In future, however, now that this difficulty seems likely to be removed, the planting can be pushed on as rapidly as the resources of the Arboretum will permit and the principal collections, at least, of the most important trees placed in permanent position.

The various collections already in place have grown satisfactorily during the year; and, in the case of some of the groups, begin to show the effects of the careful manner in which the trees were planted. Much attention has been given to studying and improving the special collection of shrubs, to which some important additions have been made during the year. This collection is already suffering from the want of proper space for the individual development of the plants of several genera; and it is not evident how this collection, which is thought to be unsurpassed, can be adequately provided for in the future. At present it is the most complete and therefore the most valuable feature in the Arboretum.

INTERCHANGE OF PLANTS AND SEEDS.

The interchange of plants and seeds with other botanical and horticultural establishments has been continued throughout the year. There were distributed 20,937 plants (including grafts and cuttings) and 810 packets of seeds, as follows: —

To all parts of the United States, 20,468 plants and 236 packets of seeds; to Canada, 36 packets of seeds; to different European countries, 469 plants and 452 packets of seeds; to Japan, 86 packets of seeds.

There have been received during the year 2047 plants and 382 packets of seeds. Among important contributions are plants and seeds from the Botanic Gardens at Kew, Paris, St. Petersburg, Tokio, and Sapparo, and plants from Ludwick Spathe of Rixdorf, Dr. A. Dieck of Zoeschen, Paul & Sons of Chesthunt, A. Waterer of Woking, Parsons & Co. of Flushing, Temple & Beard of Cambridge, and from many private gardens.

over fifty applying at the last entrance examinations. The "Laboratory examination" required in the subject has become not only a burden on the department, but also a troublesome feature in the general administration of the admission examinations, because it cannot be made to conform to the usual order of literary or mathematical work, and except at great expense could not be conducted with efficiency outside of the College laboratories. Hence there has been a manifest, although very possibly an unconscious, disposition on the part of the administration of the College to subordinate the Laboratory examination to a written examination on the same subject which may be held anywhere and superintended by officers who are not familiar with experimental methods. This tendency, the Director feels, should be strenuously resisted. It would end in substituting a worthless "cram" of an elementary text-book for experimental work and destroy the only value of the requisition.

As the writer has so often insisted, the importance of experimental science in a scheme of education depends solely on the circumstance that it offers a peculiar discipline which is especially adapted to the training of a certain class of minds unfitted from lack either of verbal memory or of critical perceptions to excel in literary studies, and in the statement of the requisition and in the corresponding undergraduate course designated as Chemistry *B* it has been the constant aim of the department to foster the peculiar discipline of the study and to subordinate as far as possible the acquisition of a mass of facts, however useful such knowledge might be or however valuable such a method of study in other relations.

With all our efforts to maintain an adequate test of scientific training at the extrance examinations, it has been very difficult to secure satisfactory teaching of science at the preparatory schools. Although in some quarters there is a manifest improvement from year to year, yet few of the teachers trained under literary methods fully appreciate the true spirit of scientific discipline. The ever-increasing demand for scientific education has led to the equipment of laboratories in many of the schools, and the new channels for admission to College have been eagerly sought; but it is not enough to substitute laboratory for class-room teaching if the methods of instruction are as mechanical as before. The perfunctory repetition of a series of experiments, if not directed with the true spirit, may readily become mere child's play and of no more value as a means of education than the turning of a crank. The great object should be to lead the student to observe for himself and to make correct inferences from observed facts, and yet in several schools which have become important feeders of the College under the new system a laboratory text-book is used, with might be expanded indefinitely, but its educational value would not thereby be increased. On the contrary, beyond a certain limited expansion it would be diminished, and a sufficiently extended series of specimens to fairly illustrate the variety, extent, and beauty of the mineral kingdom is all that need ever be exhibited under glass to the general public or even to the student unless a specialist.

This is the idea which will be followed in the new arrangement, with the expectation that the plan will be reasonably permanent. Specimens illustrating less striking relations and affiliations of the mineral species will be classified in trays protected in dust-tight lockers beneath the show-cases, where they will be readily accessible to the special student, and these trays will have four times the capacity of the cases. The cost of the lockers, amounting to about sixteen hundred dollars, has yet to be provided for.

As the most pressing need of the department for the moment was room for the elementary teaching of Mineralogy, we have begun in the equipment of the Museum with the furnishing of the Mineralogical laboratories and lecture room, and this has been thoroughly done in the best manner we could devise. These rooms are now in full use and afford ample accommodations for a class of one hundred students. Unfortunately we have not yet the means of equipping the assay laboratory in the basement, for which at least three hundred dollars additional are required; and this amount, together with the sixteen hundred dollars just mentioned — besides a few small items — make up the two thousand dollars needed, as above stated, to carry out the original plan. This deficiency may make it necessary to give up for the present year the course in Assaying promised in the College Announcement.

Since the room formerly occupied by the mineral collection has been vacated, amounting to about one fourth of the floor-space in Boylston Hall, the question — referred to in the last report — how best to adapt this space to the uses of the Chemical department, presses for an immediate decision. The needs are very urgent; for, while the classes in Mineralogy have now abundant room in the new Museum, the Chemical laboratories are already crowded nearly to their utmost capacity; and, although by our system of dividing the lockers while using the same desk for different students on alternate days, slightly larger elementary classes might be accommodated, we have not a single place fitted for an advanced student unoccupied. Moreover, our advanced laboratories, although fitted with all the necessary appliances for work, compare unfavorably with those of recent construction, and it is earnestly to be hoped that in making the proposed changes no expense will be spared that is necessary to two of the atoms of bromine in this way, leaving the third unaltered; (3) by replacing two of the atoms of bromine as in (2), while the third is replaced by hydrogen; (4) by replacing one or two of the nitro groups by the alcohol oxyradicals. The results of this work were published this summer.

With his private assistant, W. H. Bentley, Professor Jackson studied the products of the action of nitric acid on bromtrinitrophenylmalonic ester. These were found to be the nitrite of this body, which underwent a most striking decomposition when heated, and the bromtrinitrophenyltartronic ester. Several derivatives of both substances were studied, especially the anilido compounds and salts of the anilidotrinitrophenyltartronic ester, and also some allied substances. But the work has not yet been published, since two forms of the anilidotrinitrophenyltartronic ester were discovered late in the year, and as they seem to belong to none of the explained classes of isomers, there is still need of more extended and careful study.

Professor Hill and W. S. Hendrixson continued the study of the chlorsulphopyromucic acids and are now ready to publish the results of their investigations. They also studied the action of oxidizing agents upon methylpyromucic acid and definitely established its relations to pyromucic acid.

W. L. Jennings continued, under the direction of Professor Hill, the study of the higher boiling portions of the oil obtained in the distillation of wood at low temperatures. He also began a systematic study of methyl pyromucic acid and tried the action of sulphuric acid upon pyromucic acid under varied conditions with the hope of establishing the formation of isomeric products.

Professor Hill, with H. N. Herman, studied the reaction which takes place when the substituted pyromucic acids are heated with strong mineral acids. They showed that a number of bodies may thus be formed which are perfectly analogous to the substance obtained in a similar way from the x-dichlorpyromucic acid by Professor Hill and Dr. L. S. Jackson. The structure of these bodies is now under investigation.

The work on the revision of the atomic weights of the chemical elements, which was undertaken by the Director as early as 1877, was continued during the past year with important results. The determination of an atomic weight is primarily a process of quantitative chemical analysis, which simply gives as its direct result the proportion by weight in which two elementary substances unite with each other to form a chemical compound. The analytical methods employed are as a rule very simple, but must be capable of great refinement; and the difficulty of fixing with the highest accuracy the value sought depends on the circumstance that it is so very hard to secure absolute purity of materials or to prevent the formation of secondary products in the chemical processes employed. What we observe in any case is a combining ratio, and we thus deduce from an accurately determined atomic weight one that is unknown or less precisely fixed.

The theoretical standard of reference in our system of atomic weights may be the atom of hydrogen assumed to be unity, or — which many chemists prefer — the atom of oxygen assumed to be sixteen; but, as appears from the above, the actual standard of reference in any case must be the atom of that element with which the elementary substance in question forms the compound best fitted to give accurate results. Our choice is usually exceedingly limited.

Of the three substances concerned in the determination of an atomic weight — namely, two elementary substances and the compound formed by their union — we must be able to weigh, either directly or indirectly, at least two with absolute accuracy, and we must know not only that the weights taken represent absolutely pure material, but also that our processes of analysis yield no secondary products, and we have constantly to guard against any trace of hygroscopic moisture or the smallest particles of inclusions or admixtures of any kind. So difficult is it to secure the necessary conditions that seldom more than one compound of a given element — sometimes no compound as yet known — is capable of yielding results of the highest order of accuracy. Hence we are often forced to take as our standard of reference the one element which yields the one available compound, and thus it may come to pass that our knowledge of the relations of an element to such a standard may be more accurate than our knowledge of the relations of the standard to the more fundamental units of the system.

One of the most accurate relations which has been determined, and one in regard to which all experimenters are essentially agreed, is that of silver to bromine. Both of these elementary substances can be prepared in the highest degree of purity; a compound of the two can be formed of perfectly uniform constitution, and so as to exclude the possibility of any loss of material, and finally two of the three substances involved — namely, silver and bromide of silver — are so invariable under atmospheric agents that they can be weighed with absolute precision. The arithmetical mean of all the results that have been obtained by the most skilful experimenters gives for the value of the ratio of silver to bromine 108.00; 80.007; and this may be taken as 108.00; 80.00 within one ten-thousandth of either value, the highest degree of accuracy that we have been able to reach in such analytical work. As this result may be regarded as final, except so far as improved methods may serve to further develop the decimal places, it seemed highly desirable to group as many as possible of the atomic weights about this ratio by referring them to silver or bromine as fundamental standards. In this way an ever-increasing number of secondary standards could be established, all rigorously related, and the circle slowly widened until it comprised all known elementary substances.

The bromides of the elements are a remarkably stable class of compounds, and the use of these bodies in the investigation offered this very great advantage, that in many cases we could weigh not only the bromide analyzed with one or both of its constituents, but also, besides the bromide of silver formed in the process, the exact amount of metallic silver required. Thus we could establish the relation of the atomic weight sought to those both of silver and bromine at the same time; each experiment in fact involving a new determination of the relation of silver to bromine and exhibiting its credentials by the correspondence of the value thus obtained with the fundamental value so often and so absolutely confirmed. The writer was led to the adoption of this general method during his extended investigation of the atomic weight of antimony that has been so long in question, and he was able to prove solely on the basis of his own work that

$$\mathrm{Ag} : \mathrm{Br} : \mathrm{Sb} = 108.00 : 80.00 : 120.00.$$

Here all three terms are deduced from the results of one and the same set of experiments; and since the third term involves the other two, and the ratio of the first two is identical with a value so well established, the evidence of the correctness of the third term is overwhelming.

On the same principle it was subsequently shown by the work of Dr. O. W. Huntington in this Laboratory on the analysis of bromide of cadmium that

$$\mathrm{Ag} : \mathrm{Br} : \mathrm{Cd} = 108.00 : 80.00 : 112.31.$$

During the past year Dr. T. W. Richards has brought the atomic weight of copper into the group of accurately-determined values thus related to the same fundamental constants. Unfortunately, bromide of copper is not only a very hygroscopic substance, but also when moist absorbs oxygen from the air with the formation of an oxybromide, so that it was not found practicable to weigh the material itself without risk of change. It was possible, however, to repeatedly crystallize the body out of contact with the air and prepare a solution of this pure material. Dr. Richards, moreover. found in methyl orange an exceedingly delicate indicator, by which the perfect neutrality of the solution could be verified, and in such a neutral solution copper and bromine must be present in atomic proportions. The weight of both these elements could be determined with the highest precision — the copper by electrolysis and the bromine by precipitation as bromide of silver. Furthermore, by weighing the silver used, as well as the bromide of silver formed, he deduced as the mean value of a large number of determinations that

$$Ag : Br : Cu = 108.00 : 80.00 : 63.64,$$

as before, to within one ten-thousandth part of either value.

As is well known, a strip of metallic copper immersed in a solution of nitrate of silver replaces the silver, which separates from the solution in a condition suitable for accurate weighing, — while the copper, if not in excess, completely dissolves. If the process were, as it is usually regarded, a simple replacement of silver by copper, the relative weights of the two metals involved would give at once the ratio of their atomic weights to each other. In fact, such a simple replacement is the chief phase of the process. But at ordinary temperatures, in consequence of the tendency of copper to form basic salts, the primary reaction is always accompanied by a secondary change, which, although usually very inconsiderable, is sufficient to disturb the exact proportion we are seeking to find. More copper dissolves than is required to precipitate the silver, and the breaking up of a portion of the nitric acid salt is indicated by the evolution of nitrous fumes. Three years ago Dr. Richards carefully studied this reaction and found that by maintaining the temperature below the freezing point of water the secondary change could be wholly prevented, and by regulating the temperature as thus indicated he was able to employ the process in a direct determination of the ratio between the atomic weights of silver and copper. Using the purest materials that could be prepared, he obtained as the result

$$Ag : Cu = 108.00 : 63.64.$$

Thus the results obtained this year exactly confirm those of 1887. Between the three quantities, Ag, Br, and Cu, the ratio has been determined in every possible combination and all the results exactly agree. Further investigations on the same general plan are now in progress at this Laboratory.

During the past year large accessions have been made to the Mineralogical collection. The year has been remarkable for the number of meteoric masses which have fallen or been discovered in the United States. Two of the largest of these masses have been secured for our Museum, and sections of fragments of most of the others, of sufficient size to illustrate their nature and structure, have been obtained. Our collection of these remarkable bodies is now one of the largest in the world. Several suites of very interesting minerals have also been added to the cabinet, among which a set of magnificent specimens of aragonite from Sicily deserves special notice. The labor attending the removal of the collection has been necessarily very great, and has chiefly devolved on Dr. Huntington, whose time has been largely occupied with the important details.

There have been only two changes in the corps of Laboratory teachers and assistants during the year. Mr. Walter Scott Hendrixson left us at the close of the Summer School to accept the professorship in the college at Grinnell, Iowa, and Mr. Henry Newell Herman of the last graduating class has been added to our body as assistant in organic chemistry.

JOSIAH P. COOKE, *Director.*

THE JEFFERSON PHYSICAL LABORATORY.

To the President of the University:

Sir, — The number of students registered in the Electives in Physics during the year 1889–90 was 234. The number of those who continued in the courses during the year was 218. The students were distributed among the Electives in the following manner:

Physics *B*	89
" *C*	53
" 1	29
" 3	17
" 4	12
" 5	0
" 6	5
" 7	7
" 8	4
" 20*a*	2
Total	218

The Summer School in Laboratory Physics, covering essentially the ground of Physics *B*, was conducted by Mr. Joseph Y. Bergen. Twenty-one students attended this school.

A higher school, substantially the equivalent of Physics *C*, was established and placed under the charge of Mr. W. C. Sabine, Assistant in Physics. Ten students, principally teachers, completed the work of the course. These teachers came from a wide geographical area. One of them is at present teaching Laboratory Physics according to the Harvard method in Denver, Colorado. These schools are undoubtedly useful in extending the knowledge of the laboratory methods which characterize the present course of instruction in Physics in the University. Since the term has begun many letters have been received containing enquiries in regard to laboratory appliances and methods.

In order to systematize as much as possible the instruction in Physics *C*, which is the higher elementary laboratory course, and is the equivalent of the maximum requisition in Physics for admission to College, the Director prepared a laboratory manual which is now being used in this course. The demand for this pamphlet and also for that prepared by Professor Hall for Physics *B* shows great interest throughout the country in the laboratory method of instruction in Physics. This year 228 applicants for admission to College presented Laboratory Physics equivalent to Course *B* instead of the text-book requisitions.

The increase in the number of students offering experimental Physics for admission to College is very gratifying. This result is due to the careful and conscientious work of Professor Hall, who, by well-considered experiments and suitable apparatus, has made the laboratory method in Physics an important element in the preparatory schools.

Eight applicants for admission offered this year the maximum requisition. It is probable that the number who present this requisition will increase; for several schools, including Exeter, are now prepared to give the higher laboratory course. An examination of the number of students who take the electives in Physics shows that the number of students who elect the elementary laboratory courses is increasing. The gain in the higher courses, however, is slight. In these, it must be remembered that the Differential Calculus is required. This accounts, in part, for the small number in these courses. There should, however, be several graduate students pursuing higher scientific work in the Laboratory. During the past year there were two graduates acting as assistants, who were occupied on scientific investigations. It is probable that the number of graduate students who are fitted to pursue original scientific work will always be small. This is the case even in the principal foreign universities.

The Professors and Assistants in the Physical Department of Harvard University have been much occupied during the past two years in perfecting laboratory methods for elementary students. That the work done in making the elementary laboratory courses thorough and systematic is important, cannot fail to impress the visitor who witnesses one of the exercises in the Laboratory.

The following popular lectures were delivered to the Freshmen class during the second half-year: —

Sound, with especial reference to the Telephone and Phonograph.	Professor Trowbridge.
Light, with especial reference to Photography.	Professor Trowbridge.
Light, in its relation to Spectrum Analysis.	" "
Electromagnetism.	" "
Prime Motors.	Professor Hall.
Steam Engine.	" "
Dynamo Machines.	" "
Electric Lighting and Electric Railways.	Professor Hall.

These lectures were attended by 300 to 400 students. In June last the Faculty voted to abolish the examinations upon these lectures and to make the attendance upon them wholly voluntary in future.

ADVANCED WORK AND INVESTIGATION.

Professor Trowbridge, together with Mr. W. C. Sabine, Assistant in Physics, was occupied during the year with an investigation on Electrical Waves in Air. The experimental part of the investigation was carried on at night in order to avoid interruptions and to secure the necessary conditions of darkness for the photographic method which was employed. Large air condensers were used for the first time in the study of electrical oscillations in air; and a marked periodicity in the phenomena was discovered. The great sensitiveness of the silver salts to light was shown in a striking manner in this investigation — since there was no difficulty in securing a photograph of an electric spark which lasted only three millionths of a second. Professor Trowbridge also investigated by means of Spectrum Analysis the effect of electrical waves on the motion of molecules of metals. It was found that the electrical waves in their oscillations do not convey the molecules of metals from terminal to terminal between which the oscillations take place; but merely agitate them so that they emit light-waves. Papers describing the results of these investigations were published in the Proceedings of the American Academy of Arts and Sciences, and also in the London Philosophical Magazine.

Mr. C. A. Rich, Assistant in Physics, has been occupied during the past year in studying the distribution of alternating currents of electricity upon the surface of hollow conductors. When the reversals in direction of strong currents amount in number to 500 per second the electricity penetrates to a little more than one twenty-fifth of an inch into the conductor. This investigation touches the important, practical question of distributing electrical energy by means of hollow conductors instead of solid ones.

Mr. Charles Nutt, working under the direction of Professor B. O. Peirce, completed a paper upon the manufacture of electrical condensers. The importance of such condensers in electrical measurements is very great, especially in all questions relating to the transmission of speech over great distances by means of electricity. Mr. Nutt shows how reliable condensers can be constructed.

Mr. D. W. Shea, holder of the Tyndall Scholarship, is continuing his work on the velocity of light in magnetic fields under Professor Kundt at the University of Berlin. Mr. Shea was engaged for two years on this subject in the Jefferson Physical Laboratory.

Professor B. O. Peirce has completed during the year an investigation in Mathematical Physics, the results of which will be shortly published.

Professor Peirce and Dr. Willson have studied various methods of determining battery resistance. The earlier results were embodied in a note in the American Journal of Science XXXVIII., December, 1889. Later observations made with much greater care have not yet been reduced, but will be published during the ensuing year.

Professor E. H. Hall has been engaged in studying the periodic changes of temperature in the walls of the cylinder of a Steam Engine. This investigation will be continued during the present winter. A study of the conductibility for heat of nickel and cast iron was made in connection with this investigation, and the results will soon be ready for publication.

In studying the magnetic field in the Laboratory, Dr. R. W. Willson repeated the observations made in 1887, and referred to in the report of the Director of the Laboratory for that year. In addition to this he has made a much more careful survey of certain parts of the building, with a view to ascertain the magnetic effect due to the brick piers and walls. The results of this investigation are published in the American Journal of Science, Vol. XXXIX., pp. 87–93, pp. 456–471.

Several investigations in addition to those mentioned in this report were contemplated during the year; but the instrumental difficulties were found to be too great to engage in them. The scientific work of the Laboratory has been done during hours snatched from teaching and in the face of mechanical difficulties to which the Director referred in his last report. Having the importance of increasing the reputation of the University for high learning clearly before him, he cannot emphasize too strongly the truth that a physical laboratory needs a mechanician and a suitable workshop.

The Visiting Committee of the Laboratory in a report to the Board of Overseers, April 23, 1890, recognized fully this pressing need of the Laboratory and concluded their report as follows: —

"We are strongly of the opinion that the acceptance of the magnificent Laboratory building as a gift carries with it an implied trust, on the part of the University, that Science shall receive from it the fruits of original research it is so well fitted to yield."

Through the efforts of Mr. Francis Blake, of the Visiting Committee of the Laboratory, an endeavor has been made to raise a fund of one hundred thousand dollars to provide means for Physical Research in this University.

Contributions to this fund have been received as follows: —

Francis Blake	$1,000
William Endicott, jr.	2,000
American Bell Telephone Co., through John E. Hudson, President	1,000
Henry M. Whitney	1,000
Frederick L. Ames	1,000
George Putnam	250
John E. Hudson	250
W. H. Forbes	250
E. D. Leavitt	250
	$7,000

The Laboratory has also received as a gift from the Thompson-Houston Co., of Lynn, a three horse power electrical motor with complete attachments.

JOHN TROWBRIDGE, *Director.*

THE OBSERVATORY.

To the President of the University:

Sir, — The urgent need at the Observatory of a fire-proof building has been pointed out in several successive annual reports. The last year has brought to the Observatory about nine thousand photographic plates, — some taken in Peru, some in California, and some in Cambridge. The total number of these plates is about twenty-seven thousand. All of them are stored in wooden buildings, where they might be destroyed by fire in a few minutes. They represent nearly the entire sky from the north to the south pole, the greater portion being covered several times, and they show not only the positions of the stars, but also their spectra. A large part of the charts and nearly all of the spectra are unique and have not been photographed elsewhere. Accordingly, in case of fire, future astronomers wishing to study changes in the stars would be obliged to begin with 1891 instead of being able to carry their work back in many cases to 1885. Even the weight of the plates is becoming a source of danger to the main building of the Observatory, as its floors are not constructed to carry heavy loads. Besides the photographs, a large amount of original manuscript, representing observations extending over a dozen years, is liable to destruction. This danger would be avoided by publication in the case of the manuscripts, but only partially in the case of the photographs. Accordingly excellent progress in publishing has been made during the last two years. But even here we are stopped by the expense and are obliged to delay until the interest of the publishing funds has accumulated. Otherwise, several additional volumes could be at once undertaken. The library is one of the most extensive and complete in astronomical works in the United States, and if destroyed could not be easily replaced. Finally, the instruments are delicate and valuable, although representing a small sum compared with the photographs and manuscripts.

In the last annual report reference was made to the loss sustained by the Observatory of one of its oldest friends, Mr. J. I. Bowditch. Since then I have learned that to his many gifts to the Observatory he has added another, — a legacy of twenty-five hundred dollars.

OBSERVATORY INSTRUMENTS.

East Equatorial. — The observations made during the year are as follows: 21 eclipses of Jupiter's satellites have been photometrically observed, making in all 451 since 1877. The following comets have been observed for position: 1889 I. on 1 date; 1889 V. on 31, comprising 34 observations; companion to 1889 V. on 3; 1889 VI. on 7; 1890 I. on 3; the comet discovered by Brooks, March 19, on 12 dates; the comet discovered by Coggia, July 18, on 4 dates; the comet discovered by Denning, July 23, on 2 dates; and D'Arrest's comet, rediscovered by Barnard on October 6, on 1 date. The systematic observation of 17 circumpolar variables has been continued, as in the previous year, and one recently discovered by photography has also been added to the list. Each star is observed about once in two weeks by the Argelander method and by direct estimation of magnitudes. The total number of these observations during the last year is 381 relative estimates by the Argelander method and also the same number of estimates of magnitude, with the large telescope. Relative estimates of these variables were obtained at the same time with the finder, if the stars were visible in it; 37 series of relative estimates of comparison stars for these variables have also been made, and 10 series of photometric measurements of the same stars with the wedge photometer. The wedge photometer has likewise been used in the observation of 22 series of zones from the Durchmusterung, comprising 838 stars.

In order to facilitate the decision of questions relating to the identity of stars observed with the meridian circle in the zone +50° to

+55°, 70 observations of the relative positions of stars have been made with the Equatorial. In addition to the above, observations have been made of several other miscellaneous objects. These observations, except those of Jupiter's satellites, have been made by Mr. Wendell.

Meridian Circle. — The reduction of the observations made with this instrument by Professor William A. Rogers continues under his supervision. The printing of the zone catalogue, as shown under the head of Publications, is far advanced. The manuscript of the volume which is to contain the separate results of previous observations of the stars of the Harvard College zone reduced to 1875.0, with a discussion of the systematic errors involved in the reduction to the system of the Astronomische Gesellschaft of the various catalogues employed, together with the resulting proper motions, is ready for the printer. The time required in preparing this volume has allowed little progress to be made in the reduction of the observations made from 1879 to 1883.

The observation of the southern zone comprising the declinations from —9° 50′ to —14° 10′ has been continued throughout the year by Professor Searle, assisted by Mr. Dunne. The number of nights of observation is 111; the total number of observations is 6955, distributed as follows: 214 relating to circumpolar stars, 777 to fundamental stars, 5768 to zone stars, 70 to variable stars, and 126 to stars incidentally observed. Continuous progress has been made in the reductions, and forms have been arranged for the publication of the observations. A few series of observations have been entered in these forms.

West Equatorial. — The six-inch equatorial mounted in the West Dome has been used in testing the new method proposed by Professor Michelson for measuring double stars by means of diffraction images. Mr. W. M. Reed has also used it in an investigation of the light curves of variables of long period. A large part of the work has been done during the last month, but in all 218 observations have been obtained on 40 nights.

HENRY DRAPER MEMORIAL.

During the past year 1309 photographs have been taken with the Bache telescope at the station near Chosica in Peru. Nearly all of them relate to the region south of —20°. Photographic charts having an exposure of ten minutes and showing all stars to the twelfth magnitude have been obtained, comprising nearly the entire region. Charts with an exposure of sixty minutes, showing stars to the fourteenth magnitude, cover about one half of the region. Spectra with an exposure of ten minutes, including stars of the sixth magnitude, cover nearly the entire region; and spectra with an exposure of sixty minutes, including stars of the eighth magnitude, cover about one half of the same region.

An instrument like the Bache telescope, having a photographic doublet for an objective, is capable of collecting so large an amount of useful material that Mrs. Draper decided to have constructed a second instrument of the same dimensions. This was accordingly mounted on the Observatory grounds and has been kept at work every clear night until daybreak since September 27, 1889. 2157 photographs have so far been taken, including charts with exposures of ten minutes, covering the sky north of —20°. By placing over the objective a prism of small angle, the spectra of very faint stars have been obtained even when they were as faint as the tenth magnitude. Even red stars can be photographed in this way, and many objects having peculiar spectra now come within the reach of photography. Thus twenty-nine spectra of the fourth type have been obtained of which six, namely, DM. +14° 2048, A. G. C. 16937, 18947, 20554, 29232, and 30526 ($\pi_{,}$ Gruis), are new. The variable star U Hydrae belongs to this class. Spectra of fifteen planetary nebulae have been photographed. The hydrogen line, F, has been shown to be bright in eight stars, δ Centauri, μ Centauri, η Centauri, H. P. 1124, 3747, A. G. C. 17717, 18859, and χ Ophiuchi; the last has also other bright lines. Photographs have been obtained of all of the stars known to belong to that remarkable class discovered by Rayet, in which the spectrum consists mainly of bright lines. They number twenty-eight, and thirteen of them have been discovered in the present investigation, three during the past year. Their photographic spectra generally resemble closely those of the planetary nebulae. The hydrogen lines are shown to be bright in thirty variable stars of long period, namely: R Andromedae, o Ceti, U Ceti, R Tauri, R Aurigae, U Orionis, R Lyncis, L_2 Puppis, R Carinae, S Hydrae, R Leonis, R Ursae Majoris, R Corvi, T Ursae Majoris, R Virginis, S Ursae Majoris, U Virginis, R Hydrae, S Virginis, R Camelopardalis, R Bootis, S Coronae, U Herculis, R Draconis, R Ophiuchi, T Herculis, χ Cygni, T Cephei, R Aquarii, and R Cassiopeiae. This peculiarity of the variable stars furnishes a means of discovering them. Seven new variable stars have been found in this way, namely: DM. +48° 2942, DM. +33° 470, A. G. C. 18770, A. G. C. 22855, and the stars whose approximate positions for 1900 are in R. A. $1^{h.}$ $55.1^{m.}$, Dec. +56° 15′, R. A. $4^{h.}$ $37.1^{m.}$, Dec. —38° 26′, and R. A. $20^{h.}$ $9.4^{m.}$, Dec. —39° 29′.

The photographic charts mentioned above generally permitted the variability of these objects to be confirmed at once without waiting for confirmation visually. Every year, by the accumulation of additional photographs, this can be done more readily. Besides these stars about forty other stars have been suspected of variability owing to their spectra, and photographs of the regions containing them are taken every few days. A careful examination is made by Mrs. Fleming of all the photographs taken with the eight-inch telescopes in Cambridge and Peru, and has led to the discovery of about a hundred new third-type stars besides the objects named above. Mrs. Fleming has also had charge of the computation involved in Volumes XXVI. and XXVII. described below, and has prepared a large part of them for the press.

The detailed study of the spectra of the brighter stars with the eleven-inch telescope has been continued. Photographs have now been obtained, 845 during the past year, of nearly all the stars visible in this latitude and sufficiently bright. A beginning has been made of the description of these spectra. The most interesting result has been the discovery by Miss Maury of a second star, β Aurigae, which is shown by the doubling of the lines in its spectrum at regular intervals to be a close binary. The period of revolution in this case is very nearly four days. 78 photographs have been obtained of the spectrum of this star, and 89 of ζ Ursae Majoris. Two of the large prisms have also been attached to the fifteen-inch equatorial, and 143 photographs of the spectrum of ζ Ursae Majoris and 26 of β Aurigae have been taken with this instrument during the morning hours after its use for visual purposes is over. One photograph of σ Herculis seemed to show that this star also was double, but it has not been confirmed, although numerous additional photographs have been secured. Some interesting photographs have been obtained of the spectrum of several metals in the Bunsen flame. A photographic determination of the position of the pole of the heavens was made by Mr. R. D. Upham with the fifteen-inch Draper reflector. This apparently furnishes a means of measuring precession and nutation directly.

Boyden Fund.

Work under this fund has been continued at three places: Harvard College Observatory, Wilson's Peak in Southern California, and Chosica in Peru. Professor William H. Pickering took immediate charge of the work at the Observatory. Much time was devoted to visual observations of the colors and markings of the planet Mars with the twelve-inch telescope. A number of the so-called canals were recognized, but only one of them was distinctly seen to be double.

The best methods of photographic enlargement of astronomical objects have also been studied. Investigations, founded on observations made here and elsewhere, have been conducted with regard—first, to the meteorology of the globe, with particular reference to cloudiness and other phenomena affecting the choice of astronomical stations; secondly, to the fundamental principles of astronomical photography; thirdly, to the great nebulous region comprising a large part of the constellation Orion; fourthly, to the best form of standard light; and finally to other details of quantitative photometric work. As will be seen from the list of publications, portions of these investigations have appeared in various periodicals. Instruments and buildings have been planned and largely constructed for future use at Arequipa, Peru.

The station at Wilson's Peak was kept in operation until August, when the telescope was dismounted and sent to Cambridge to be transmitted to Peru. The advantages of the climate of Wilson's Peak are less marked than was anticipated; still, they have been sufficient to justify an attempt to purchase a suitable site there for a more permanent station. This attempt has not yet succeeded owing to uncertainties of title and other difficulties. If it should fail, other equally good locations in the same region can be secured. The photographs taken at Wilson's Peak have largely represented the Moon and the planets, particularly Mars, the more conspicuous permanent markings of this planet having been successfully photographed. An important accession to the white spot surrounding the southern pole was found by the photographs to have occurred between the nights of April 9 and 10. One of the most interesting discoveries has been that of the immense extent of the great nebulous region of Orion; many interesting photographs of double stars and clusters have also been obtained.

Good progress was made at the station near Chosica in Peru, maintained by the Draper and Boyden departments conjointly, until the approach of the cloudy season. The clouds gradually rose higher and higher until they covered the observatory. Accordingly, in November, 1889, the Messrs. Bailey visited various points along the coast, going as far south as Valparaiso, and passing some time in Pampa Central in the desert of Atacama, one of the driest points on the surface of the earth. Their observations led to the conclusion that no better place could be found than Arequipa, situated on the Mollendo railway, at an elevation of about eight thousand feet. It did not seem best to make the change until the clear season was over. They accordingly returned to Chosica and resumed work there until October, 1890, when the instruments were dismounted, and it is expected that observations will be continued early in November at Arequipa.

The observations of the southern stars with the meridian photometer are now approaching completion. 110 series, comprising 13,836 stars (including duplicates), have been observed. The number of photometric settings is 55,344.

Valuable aid was rendered to the expedition by various residents in Peru, especially by Hon. John Hicks, United States Minister to Peru, and by Señor J. L. de Romaña, of Arequipa, under whose supervision a very instructive series of meteorological observations was carried on at four stations: Mollendo, at the sea level; Arequipa, at the elevation of 7500 feet; Vincocaya, at the elevation of 14,600 feet; and Puno, at the elevation of 12,500 feet.

THE BRUCE PHOTOGRAPHIC TELESCOPE.

The disks of glass for the lenses of this instrument have not yet been received. The disk for the prism, which is twenty-five inches in diameter and three inches thick, arrived safely. It appears to be unusually free from defects and nearly colorless. The important gift by Miss Bruce of six thousand dollars, to be distributed among astronomers of all nations, should be mentioned here. It furnishes an example of using money so as to secure the greatest scientific return, which, it is hoped, will find many imitators.

MISCELLANEOUS.

Library. — The library of the Observatory has been increased during the year by the addition of 311 volumes and 856 pamphlets. The total number of volumes and pamphlets on November 1, 1890, were respectively 6767 and 6891.

Time Service. — The standard time signals have been sent mainly by the Bond clock No. 394. The errors have been abnormally large this year. Their average at the time of observing star transits has been 0ˢ.42, the average interval between determinations being 2.4 days. The average error at 10 A.M. has been 0ˢ.37, the number of clock comparisons being about 700. The average change in the daily rate from each day to the next has been 0ˢ.38. On July 25, however, the error was uncertain for several hours on account of a defective performance of the Ballou clock No. 103, which was then sending the signals; and on February 19 no signals were sent on account of damage to the transmitting apparatus by lightning on the previous evening. A line following a new route near Harvard Square has improved the transmission of the signals.

The Boston Time Ball was dropped on 286 week days automatically by telegraph at noon. On two other occasions it started prematurely, but was immediately rehoisted, as a signal of incorrect dropping, and then slowly lowered.

Telegraphic Announcements. — The distribution of telegraphic announcements of discovery has been continued under the management of Mr. Ritchie. During the year telegrams concerning the discovery of eleven asteroids and five comets, and others relating to three orbits and to two positions of comets, have been sent out, requiring in all 278 telegrams and 14 cable messages.

Publications. — The printing of the zone catalogue of stars between the declinations +55° 10′ and +49° 50′ has proceeded as far as the right ascension 17^h, and, at the present rate of progress, should be finished in about six weeks. This catalogue forms the chief part of Volume XV., Part II., of the Annals of the Observatory. Volume XVIII. was completed during the year by the publication and distribution of its final section, No. X. This contains a discussion of meridian circle observations of stars near the south pole. The first portion of Volume XIX., Part II., is in type. It consists of a discussion of the zodiacal light by means of the observations made here during the last fifty years. Volume XXI., Part I., and Volume XXII., mentioned last year as nearly complete, were published during the year. These works contain the observations of the New England Meteorological Society for 1888 and the observations made on Pike's Peak by the United States Signal Service, 1874 to 1888. Volume XXI., Part II., will be published immediately. It contains the observations of the New England Meteorological Society for 1889, with essays by officers of the Society on climate and sea breezes. Of Volume XXIII., Part I., 121 pages are in type. This part contains a description of the observations with the meridian photometer in the years 1882 to 1888, inclusive. The printing of Volume XXIV. is completed. It contains the determinations obtained with the large meridian photometer of the brightness of stars from the Durchmusterung, and of a considerable number of miscellaneous stars. The total number of stars measured in this work is 20,982. Volume XXV. is not yet undertaken. Volume XXVI., Part I., is in type to page 138. It contains a description and discussion of the observations made with the Bache telescope during the years 1885 to 1889. The printing of Volume XXVII. is completed. It forms part of the Henry Draper Memorial, and contains a catalogue of the spectra of 10,347 stars, to be known as the Draper Catalogue. Volume XXX., Part I., which is also completed, forms a continuation of Volume

XX., and contains meteorological observations made at the Blue Hill Observatory during the year 1889.

Besides the volumes of Annals above mentioned, the following publications have appeared during the year: —

Forty-fourth Annual Report of the Astronomical Observatory of Harvard College. Cambridge, 1890.

Henry Draper Memorial. Fourth Annual Report of the Photographic Study of Stellar Spectra conducted at the Harvard College Observatory. Edward C. Pickering, Director. Cambridge, 1890. Reprinted in the Memorie della Società degli Spettroscopisti Italiani, xix. 88.

Circular on Aid to Astronomical Research. By Edward C. Pickering. Reprinted in Nature, xlii. 299; The Observatory, xiii. 286; Sidereal Messenger, ix. 329.

Observations of the Zodiacal Light made at Harvard College Observatory. By Arthur Searle. Astronomische Nachrichten, cxxiv. 405.

Comparison of Photographic Efficiency of Telescopes. By W. H. Pickering. Knowledge, xiii. 35.

The Great Nebula in Orion. By W. H. Pickering. Sidereal Messenger, ix. 1.

The Occultation of Jupiter, Sept. 3, 1889. By W. H. Pickering. Ibid. ix. 148.

Photographs of the Surface of Mars. By W. H. Pickering. Ibid. ix. 254.

Visual Observation of the Surface of Mars. By W. H. Pickering. Ibid. ix. 369.

Use of the Swing-back versus the Sliding-front. By W. H. Pickering. Anthony's International Photographic Annual, 1890, p. 252.

Comets of 1887–8. By O. C. Wendell. Sidereal Messenger, ix. 38.

Orbit of Comet 1890 I. By O. C. Wendell. Sidereal Messenger, ix. 89.

Observations of Comets 1887 V., 1888 V., and 1889 I. By O. C. Wendell. Astronomische Nachrichten cxxiii. 295; also, Astronomical Journal, ix. 91.

Transit of Comet 1889 V. over a star. By O. C. Wendell. Sidereal Messenger, ix. 134.

Observations of Comets 1889 VI. and 1890 I. By O. C. Wendell. Astronomische Nachrichten, cxxiv. 113; also, Astronomical Journal, ix. 159.

An approximate solution of Euler's Equation for Parabolic Motion. By O. C. Wendell. Sidereal Messenger, ix. 176.

Observations of Comet 1886 VII. By O. C. Wendell. Astronomische Nachrichten, cxxiv. 363; also Astronomical Journal, ix. 191.

Observations of Comets 1889 I., 1889 V., Companion to 1889 V., Comet a 1890, Comet b 1890, and Comet c 1890. By O. C. Wendell. Astronomical Journal, x. 69.

Ephemeris of Comet a 1890. By O. C. Wendell. Sidereal Messenger, ix. 276.

Elements and Ephemeris of Comet a 1890. By O. C. Wendell. Sidereal Messenger, ix. 324.

Ephemeris of Comet c 1890, for October, 1890. By O. C. Wendell. Sidereal Messenger, ix. 374.

Spectra of δ and μ Centauri. By M. Fleming. Astronomische Nachrichten, cxxiii. 383; also, Sidereal Messenger, ix. 91.

New Variable in Caelum. By M. Fleming. Astronomische Nachrichten, cxxiv. 175.

Stars having Peculiar Spectra. By M. Fleming. Ibid. cxxv. 155.

Two New Variable Stars near the Cluster 5 M Librae. By M. Fleming. Ibid. cxxv. 157.

New Variable Star in Scorpius. By M. Fleming. Ibid. cxxv. 361.

Stars having Peculiar Spectra. By M. Fleming. Ibid. cxxv. 363.

New Variable Star in Sagittarius. By M. Fleming. Ibid. cxxv. 365.

Stars having Peculiar Spectra. By M. Fleming. Sidereal Messenger, ix. 379.

Transit Observations in Photography. By W. P. Gerrish. Sidereal Messenger, ix. 121.

A Simple Break Circuit for Clocks. By W. P. Gerrish. Sidereal Messenger, ix. 124.

On the Spectrum of ζ Ursae Majoris. By Edward C. Pickering. American Journal of Science, cxxxix. 46. Reprinted in The Observatory, xiii. 80; Sidereal Messenger, ix. 80.

New Variable Star in Cygnus. By Edward C. Pickering. Sidereal Messenger, ix. 232.

Sur les Résultats Photométriques auxquels peut conduire la Photographie Céleste. By Edward C. Pickering. Bulletin du Comité International Permanent pour l'exécution photographique de la Carte du Ciel, Cinquième Fascicule, p. 350. Paris, 1890.

Letter to Admiral Mouchez. By Edward C. Pickering. Ibid. p. 371.

A New Class of Binary Stars. By Edward C. Pickering. Monthly Notices of the Royal Astronomical Society, l. 296.

Southern Stars having Peculiar Spectra. By Edward C. Pickering. Astronomische Nachrichten, cxxiii. 95.

Spectrum of Pleione. By Edward C. Pickering. Ibid. cxxiii. 95.

Variable Stars in Cluster G.C. 3636. By Edward C. Pickering. Ibid. cxxiii. 207.

The Star $12^{h.}$ $18.0^{m.}$ $-48° 43'$ (1875.0). By Edward C. Pickering. Ibid. cxxiv. 21.

New Variable Star in Cygnus, DM. $+48°$ 2942. By Edward C. Pickering. Ibid. cxxiv. 271.

A history of the Observatory from its foundation to the present time was recently published by Mr. Daniel W. Baker, of Boston, in a series of articles in the Boston Evening Traveller, and has been reprinted in pamphlet form.

By the kind assistance of Hon. Patrick Egan, United States Minister to Chili, a full description of the work of the Observatory in South America, prepared by Mr. M. H. Bailey, was published at Santiago on February 19, 1890, in El Ferrocarril, and at Valparaiso on the following day in El Mercurio.

EDWARD C. PICKERING, *Director.*

THE MUSEUM OF COMPARATIVE ZOÖLOGY.

THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

uring the past year the usual courses of instruction have been n at the Museum in Zoölogy by Professor Mark and Mr. Parker, sted by Mr. C. B. Davenport in the Laboratory work. Dr. Slade given a course in Osteology.

rofessor Farlow, assisted by Mr. W. A. Setchell, has given the anical part of the introductory course of Natural History. fessors Whitney, Shaler, and Davis, and Dr. J. E. Wolff gave usual courses in Geology, Palæontology, Physical Geography, Petrography. Messrs. Harris and Cobb were the Assistants in Undergraduate instruction of the Geological Department.

he Assistants of the Museum, Professors Hagen and Faxon, Slade, Messrs. Garman and Brewster, and Professor Hyatt, e devoted a good share of their time to supplying specialists h material and information in their various departments. The logical section of the Museum, containing the Exhibition Rooms additional Laboratories of that department, is now ready for upancy. On the first floor it contains a large lecture-room with ating capacity of 320 students. On the second floor are placed Petrographical Laboratories — one for general use, the other for anced students. In the basement are found a Chemical Labora-y, a room for grinding rocks, a room for geographical modelling, a photographic room. The fourth floor is occupied by the two oratories of the Physical Geography department. On the third r, the two Exhibition Rooms assigned to the Geological and graphical Collections connect the Exhibition Rooms of the seum of Comparative Zoölogy with those of the Botanical and eralogical departments. These, in their turn, will eventually n into the Exhibition Rooms of the southwest corner-piece ining those of the Peabody Museum.

essrs. W. M. Woodworth, W. Whitney, and G. H. Parker iled themselves of the facilities offered by the United States Fish nmission Station at Wood's Holl, for which the Museum is cially indebted to Colonel McDonald, U. S. Fish Commissioner. se gentlemen, as well as Messrs. C. B. Davenport, W. E. Ritter, Professor Mark, spent some time at my Laboratory at Newport, er collecting material for future investigation, or carrying on cial work in the embryology of Myozoa, Annelids, Crustacea, inoderm, and Polyps. Mr. Woodworth spent a few days at the opening of the season in putting the Newport Laboratory in order for the reception of the students. The Museum has been fortunate enough to secure a fine skeleton of a Sperm Whale, about fifty feet in length. It was obtained off Fayal through the kindness of Consul Dabney, and is now in the hands of Professor Ward for mounting.

We have continued to make a few purchases, mainly to fill gaps in our Exhibition Rooms. Skins of some of the larger Selachians and Fishes have been mounted by Ward for the Atlantic and Pacific Exhibition Rooms. A fine Sea Elephant has been placed in the Atlantic Room. Otherwise few changes have taken place in the Exhibition Rooms. The collections open to the public remain in a satisfactory condition, in spite of the constantly increasing number of visitors, and the crowded condition of the rooms on holidays and Sundays.

The Museum is again indebted to Messrs. Brewster and Cabot, Professor Faxon, and Dr. Slade, for the interest they have taken in their respective departments, and for the care they have given to the collections in their charge.

Material has been sent for study to Dr. Paul Meyer of Naples, to Professor Goette of Strassburg, to Baron Lily Longchamp. to Dr. Richard Semon. The Marquis of Doria has kindly undertaken a revision of our collection of Bats. Exchanges have been made with the Museum of the Academy of Sciences of St. Petersburg, through Professor A. Strauch; the Museo Cirico of Milan, through M. Belloti; the Jardin des Plantes, through Professor L. Vaillant; the K. K. Hof-naturalien Cabinet (Dr. F. Steindachner); the British Museum (Dr. A. Günther); the University Museum of Christiana (Professor Collet; the University Museum of Berlin (Professor Mohus); Professor Ehler of Göttingen; Professor Lütken of the University Museum of Copenhagen; Dr. E. Ramsay of the Australian Museum of New South Wales at Sidney; C. W. De Vis of the Queensland Museum at Brisbane; and with the National Museum at Washington.

Of the Blake Collections, those in the hands of Professor Verrill have not yet been returned. Professor Perrier and Professor Milne Edwards have retained a part of the Blake Collections, while working up the collections of the "Talisman." Dr. P. H. Carpenter has continued his work on the Report of the "Blake" Comatulæ; the proofs of several of the plates to accompany his Report have been received.

Professor Huxley has returned the Spirula dredged by the "Blake" off Grenada, which was sent him for comparison while writing his Monograph on the species of Spirulæ collected by the "Challenger."

Messrs. Scott and Osborne have returned the larger part of the second and third instalment of the Western Vertebrates sent them for study. This material has greatly increased in value, not only from the work they have done upon it in the way of cleaning and repairing the specimens, but also from the careful study they have bestowed upon the part of the collections of Western fossils which has been placed in their hands. They have sent the manuscript and drawings of a second Bulletin on the fossil mammals from the White River and Loup fork formations, which is now in press.

A number of exceptionally fine or interesting Crinoids have been sent to Messrs. Wachsmuth and Springer for study, to assist them in the preparation of their magnificent Monograph of the Palæozoic Crinoids. The Curator of the Museum has always felt special interest in this monograph; it owes its origin to the work of Mr. Wachsmuth, based upon his original collection now in the Museum. On the death of Professor Agassiz, when Mr. Wachsmuth left Cambridge, he started a new collection, and with the assistance of his devoted and indefatigable collaborator, they have brought together a second collection, unique in its way, which has become well known to palæontologists from the "Revision of the Palæocrinoids." It is hoped that some arrangement may be made by which this monograph, so much of which is based upon the work of Mr. Wachsmuth on the collection now in Cambridge, may eventually appear in the Memoirs of the Museum.

The publications of the Museum issued during the past academic year are as follows: —

Of the Bulletin. — Vol. XVI. [Geological Series, Vol. II.]

No. 6. The Intrusive and Extrusive Triassic Trap Sheets of the Connecticut Valley. By W. M. Davis and C. L. Whittle. pp. 40. 5 plates. December, 1889.

No. 7. The Topography of Florida. By N. S. Shaler. With a Note by A. Agassiz. pp. 10. Plate. March, 1890.

No. 8. On Some Occurrences of Ottrelite and Ilmenite Schist in New England. By J. E. Wolff. pp. 7. April, 1890.

No. 9. On Keratophyre from Marblehead Neck, Massachusetts. By J. H. Sears. pp. 6. July, 1890. (Vol. XVI. *to be continued.*)

Vol. XVII.

No. 5. The Morphology of the Carotids, based on a Study of the Blood-vessels of Chlamydoselachus anguineus Garman. By H. Ayers. pp. 34. Plate. October, 1889.

No. 6. Cave Animals from Southwestern Missouri. By S. Garman. pp. 16. 2 plates. December, 1889.

Vol. XIX. [Complete.]

No. 1. Studies on Lepidosteus. Part I. By E. L. Mark. pp. 128. 9 plates. Feburary, 1890.

No. 2. On the Egg Membranes and Micropyle of some Osseus Fishes. By C. H. Eigenmann. pp. 26. 3 plates. March, 1890.

No. 3. Report on the Results of Dredging by the United States Coast Survey Steamer "Blake." — XXXII. Report on the Nudibranchs. By R. Bergh. pp. 28. 3 plates. March, 1890.

No. 4. A Third Supplement to the Fifth Volume of the Terrestrial Air-breathing Mollusks of the United States and Adjacent Territories. By W. G. Binney. pp. 44. 11 plates. May, 1890.

Vol. XX.

No. 1. The Histology and Development of the Eye in the Lobster. By G. H. Parker. pp. 60. 4 plates. May, 1890. (Vol. XX. *to be continued.*)

Of the Memoirs. — Vol. XVI.

No. 3. Genesis of the Arietidæ. By A. Hyatt. pp. i.–xii. 238. 14 plates and 6 tables. Published in Conjunction with the Smithsonian Institution. December, 1889. (Vol. XVI. *is completed.*)

Vol. XVII.

No. 1. The Immature State of the Odonata. Part III. Sub-family Cordulina. By Louis Cabot. pp. 52. 6 plates. February, 1890.

We have published twelve numbers of the Bulletin, four in the Geological, and eight in the Zoölogical Series. One number of the Memoirs, "The Genesis of the Arietidæ," by Professor Hyatt, has been published jointly with the Smithsonian. This important memoir has been in preparation by Professor Hyatt for a number of years, and is an important contribution to the palæontological history of the Cephalopods.

A number of Bulletins are in preparation, representing the work of the students of the Zoölogical Laboratory in charge of Professor Mark.

Mr. Louis Cabot is preparing the final part of his Memoir on the Immature State of the Odonta.

Mr. Garman is preparing for the press a Monograph on the Liparidæ, commenced seven years ago by Professor Putnam. He has also nearly completed an account of the North American Reptiles. The second part of the Memoir on the Development of Osseous Fishes, by Professor Whitman and myself, is nearly completed, and I have made good progress in the preparation of my Monograph on Calamocrinus, of which twenty plates have been completed.

The accessions to the library show a decided increase in number even over the past year, which had shown the largest accessions thus far received.

When Professor Goodale succeeded in obtaining the necessary funds for an extension of the University Museum in order to accommodate the Botanical department, it became necessary that the Museum of Comparative Zoölogy should obtain means for building a section to connect the Natural History Laboratories with the Botanical Section.

All attempts to obtain this from outside sources having failed, the Curator applied to the Corporation to advance the money needed for the building and its equipment, so as to make it available for the Petrographical, Geographical, and Geological departments. This the Corporation has done, and as on former occasions these advances, amounting to about $25,000, will have to be repaid from the income of the Museum. This will naturally cripple our resources for six or seven years, unless the sum can be provided for the Museum by the friends of the Geological department. The Geological Section, now finished, completes the plan of the laboratories for the Zoölogical, Geological, and Geographical departments, and we are now well provided with laboratories, though their equipment still leaves a good deal to be desired, as also in way of models for the Geographical and Geological departments, and in the fitting up of the Vivarium and Aquarium for the Zoölogical department. For these objects an additional $8000 is required. Ample room is now provided for the exhibition of everything that is likely to interest the public, and this space need never be enlarged, while the efficiency of the exhibit can always be improved by culling out poor specimens and replacing them by better or more interesting types. Of course the University may, in the course of time, outgrow the laboratories, but there is ample room for their expansion in the corner-piece which is eventually to connect the main building of the University Museum with the Peabody Museum, forming the South wing of the structure.

There is, however, one point in the organization of the Museum to which I should like to call attention. Nearly two thirds of the North wing, the part of our structure called the Museum of Comparative Zoölogy, is devoted to the storage of our collections intended for study and not for exhibition. I can safely say that there is no museum in which the system of storage of both dry and alcoholic specimens is as convenient for access as that of the Museum collection. Special rooms are devoted to special subjects, and they are so arranged that a number of specialists could work at the same time on any part of the collections without inconvenience. For the alcoholic collections two rooms, 30 by 40 feet, are reserved in the basement for such use. In the rooms containing the dry collection (both recent and fossil) the space adjoining the windows has been equipped with tables. A large space is everywhere left, ample for the needs of specialists interested in any part of our collection. This space is an equivalent of 8 by 40 feet in each of the nineteen rooms in which the collections are stored. It is this part of the Museum which I should like to make more available to students and specialists. But without a larger staff to oversee the rooms while they may be occupied, it is impossible to grant the unrestricted use of our collections to those who might avail themselves of the facilities we are able to give for study.

The practice of sending collections to specialists for study is ruinous to the specimens; each invoice involves considerable work on the part of the Assistants, and the danger of misplacing labels during the packing and unpacking is very considerable. So that in the future we shall be obliged, on the ground of safety for our collections, to refuse to send specimens out of the building, and to invite the specialists to avail themselves of our facilities on the spot. The staff of the Museum is somewhat crippled at present, there being no Assistant in charge of the Invertebrates. As this collection can, however, be otherwise cared for, it has been decided by the Museum Faculty not to fill this place until the Museum is out of debt. I would also call attention to the necessity of having a regular Assistant for the care of our Vertebrate Fossil Collections. These are already quite extensive, and the collections we receive in the future from the West must of necessity be very large. But at present the Museum has no means to pay such an Assistant, nor have we the means to spend from $5000 to $6000 annually for a number of years in making explorations of Western territories in order to fill our gaps, both in the fossils of the various well-known Western fossiliferous beds, and in the systematic series of fossils which are found there. The Assistant in charge of the collection of Skeletons of Mammals receives no remuneration from the Museum.

The Museum publications are strictly limited to the work done in the Museum by the Professors and their Assistants, and the students of the various laboratories, or to the work of specialists based upon the Museum collections.

The arrangement of our Palæontological Rooms progresses very slowly, mainly for want of funds for the necessary cases. It would require about $20,000 to place on exhibition a suitable selection of our fossils.

Provision has been made, by borrowing the needed money from the Corporation, for the greater part of the fossils for the Tertiary Rooms, which promise to be our most valuable and instructive Exhibition Rooms. The acquisition of a fine series of Pampas Mammals, obtained through the agency of Professor Henry A. Ward, including mountable skeletons of Mylodon, Glyptodon, Lestodon, Scolidotherium, and Toxodon, will necessitate a redistribution of the space assigned to the Tertiary Faunæ. In order to provide for the room required by North American Tertiary Mammals, two rooms at least will be required which can be advantageously filled with interesting and instructive specimens of tertiary fossils for exhibition, and the Mesozoic and Palæozoic Faunæ will each have to be limited to one room.

ALEXANDER AGASSIZ.

CAMBRIDGE, October 1, 1890.

THE PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — The Board of Trustees of the Peabody Museum of American Archaeology and Ethnology in connection with Harvard University held its annual meeting this day in the Rooms of the Massachusetts Historical Society, Boston, Hon. Robert C. Winthrop presiding. Present, Messrs. Winthrop, Lovering, Scudder, Putnam, and Wheatland.

Mr. Putnam, the Peabody Professor and Curator of the Museum, presented the 24th Annual Report, which was accepted and ordered to be printed.

An abstract was read, and a copy was ordered to be transmitted to President Eliot as the Report of this Board to the President and Fellows of Harvard University.

Respectfully submitted,

HENRY WHEATLAND, *Secretary*.

2 DECEMBER, 1890.

ABSTRACT OF THE REPORT OF THE PEABODY PROFESSOR OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY.

TO THE TRUSTEES OF THE PEABODY MUSEUM:

GENTLEMEN, — The results of the past year exhibit a great and growing interest in the Museum and its special work. Never before has so much encouragement been given or more interest manifested. The value of the Museum is beginning to be understood and its importance as a school of anthropology acknowledged. The peculiar conditions attending its foundation as an independent institution, which at the same time should form a constituent part of the University, have both helped and hindered its advancement. But the time has now come when the requirements of advanced education demand a closer connection between this and the other departments of the University.

THE BUILDING. — A year ago mention was made of the addition of sixty feet to our building, which more than doubled the space for the exhibition of collections. It was then stated that if we were to depend on the income of the small building fund, now remaining, for casing these new halls, there would be a delay of several years before the rooms could be arranged and opened to students and visitors. It therefore gives me much pleasure to state that this great loss of time has been reduced by the generous gift of Mrs. Susan C. Warren of Boston, who, on the eve of departure for Europe last summer, sent me her check for $7000, with the request that $5000 should be expended in cases for one of the new halls. This liberality on the part of one who has before shown a practical interest in the Museum has furnished the means of carrying on this work during the year, so that by spring we shall be able to begin the arrangement of the specimens in one of the new galleries and in the cases in the Lecture Hall. The cases are also being made for the first gallery, which is given up temporarily to the Semitic Collection of the University, founded by Mr. Jacob H. Schiff of New York. The understanding in this matter is that the University shall pay the cost of the work, and that on the removal of the Semitic Collection to its permanent home we shall refund the cost of the cases so far as they are made as permanent cases in the gallery and under our direction. This assistance on our part enables the Semitic department to make immediate use of the liberal gift of Mr. Schiff, and to display during the present winter an instructive collection of casts of Assyrian slabs and such other objects as have already been secured. The establishment of this new department, which has so much in common with our own, cannot but suggest the possibility of the addition of others which shall include Indian, Egyptian, and Classical Archaeology.

In relation to our part of the University Museum, it must be remembered that we have one hundred feet to cover by an addition to our present building before the southwestern corner-block is reached, and that we should hasten to secure the necessary money for this purpose. The important collections which for several years have been stored, and the specimens obtained by our now active work in the field, will fill the new rooms as soon as the cases are ready. Moreover, until the whole building is erected and we know the full amount of room available for the purpose, the perfect arrangement of the Museum, in which all the collections are to be exhibited in their natural sequence and order, is impossible. Of the original building fund of $60,000 given by Mr. Peabody there is still nearly one half remaining, and this it seems most desirable to keep as a permanent fund, using the interest for cases and incidentals as occasions arise. The other half of the fund is represented by a building which, with its cases and equipment, has cost over $116,000. Thus the original purpose of the founder has already been more than fulfilled. What is needed now is $100,000 for the completion of our part of the University Museum building.

THE COLLECTIONS. — Many important additions have been made to the Museum during the year, not only from the special explorations, but also by purchase and by gifts. Among the latter, special mention must be made of an extremely interesting collection secured by Mr. Charles P. Bowditch while in Mexico. This was brought together by a gentleman who had been living in the State of Oajaca for some time, and had obtained the specimens in part from the Mexicans and in part by his own collecting. Many were taken from graves, while others were ploughed up on cultivated fields or gathered from other sources. The collection contains a number of objects made of jadeite, including several carved pieces, among which is a large bead carved to represent a human face. There are many human heads in pottery of a general character, differing from the smaller heads so common about the pyramids of San Juan Teotihuacan, and also a lot of unquestionably ancient pottery vessels of many forms. Among them is one large vase in the form of a human figure, with a curved and greatly exaggerated nose, a wide mouth, and a singular ornament over the head. This so closely resembles the representations of the human face and the head-ornament in some of the carvings in stone found on the ancient buildings of Yucatan as to strongly suggest the identity of their origin. There are several other vases of human form, three of which have open spaces through the eyes and mouth. A necklace of large stone beads is represented on each of these figures. There are also several carved stones which are believed to be representations of ancient Mexican gods.

The Mexican collection has also been increased by gifts from Mrs. Warren, comprising numerous objects of interest purchased while travelling in that country. Among the most important is a large red jar of ancient pottery from Cholula and several of the "gods" both in pottery and stone.

Mr. Stephen Salisbury, who in many ways is continually showing his interest in the Museum, has recently given the moulds — made at his expense by Mr. Edward Thompson several years ago — of the lower portion of the western face of the ancient building at Labna known as the Palace. By a cast from these moulds we shall be able to represent a portion of this remarkable building with its strange carvings in stone. In this connection I may add that during his visit to this country last summer Mr. Thompson made several casts for the Museum from moulds of carved stone-slabs which he had taken in Yucatan. For these he kindly provided the material, and did the work with his own hands, that we might have perfect reproductions of the original carvings.

It is with pleasure that I also mention a collection of human crania from the ruins near Zuni, collected by the Hemenway Southwestern Archaeological Expedition and kindly presented by Mrs. Mary Hemenway. They are of particular interest for comparison with a collection we have from Colorado, and show that there was a certain amount of artificial deformation in the latter which does not exist in the former. We await with interest Dr. Washington Matthews' paper on the crania collected by the Hemenway expedition under the direction of Mr. Cushing.

From Miss Fletcher we have received many objects obtained during her long visits to the Omaha, Ponca, Winnebago, Sioux, and Nez Percé Indians, all of which illustrate customs of the past which are fast giving way before the changes now rapidly taking place among the Indian tribes. The most remarkable among the recent gifts, and one showing in an impressive manner the high esteem in which she is held by her friends the Omahas, is that of the Sacred Pole with scalps of noted enemies of the tribe, the sacred pipe, arrows, and other objects used in the ceremonies connected with this emblem of power and authority. These most sacred of all objects, held dear to the tribe and probably never before seen by the eyes of another race, together with the other contents of the Sacred Tent — of which mention was made in a former report — were given to Miss Fletcher and her particular Omaha friend and associate in much of her work — Mr. Francis La Flesche. These relics were given by their last guardian in the tribe to be cared for as a sacred trust in this Museum. Since, largely through her efforts, the people have become citizens and been brought to civilized ways, these objects no longer form part in the ceremonies of the tribe, and were given up to her keeping as an acknowledgment of their adoption of a new life. We can probably never obtain another group of objects telling so much of the past customs of the Indians as these strange, mysterious emblems which for centuries have influenced the acts of a united people. Their ethnological value is greatly enhanced by the information collected by Miss Fletcher during her residence among the Omahas relating to the superstitions and ceremonies connected with these sacred emblems of the tribe.

By purchase we have made a small addition to our Peruvian collection of pottery and also obtained a number of pottery vessels, stone implements, and carved stones from Chiriqui from the well-known collector, Mr. J. A. McNiel. Unfortunately a large part of this collection was in a badly-damaged condition, probably owing in great measure to carelessness in examining and repacking it at the New York Custom House.

Another important collection, obtained by purchase, consists of a large number of implements, weapons, masks, and other objects from New Guinea and from several islands of the Pacific, adding very much of interest to our collections from the natives of these islands, who are now so rapidly changing their modes of life and giving up their aboriginal weapons and implements for those of European manufacture, that it would be almost impossible to secure such a collection at the present time.

We have also received a number of casts from Paris, and many others are on their way. These comprise all the most important casts made from moulds taken by M. Désiré Charnay during the Lorillard Expedition to Yucatan and other parts of Mexico. They have been offered to the Museum on the most liberal terms, and are indispensable in illustrating the singular art and hieroglyphic writing of the ancient builders of the great stone structures in Yucatan. It is thus essential that we should have them to fill out our already important collection relating to ancient Mexico. It will be a difficult matter to so economize our resources as to pay for these instructive casts, even under the liberal terms at which we can obtain them; but it is one of the instances when we must take advantage of an opportunity that is not likely to occur again, the loss of which would be an ever-increasing regret.

Another collection has been placed in the Museum, subject to purchase. which should be secured if possible. It consists of a lot of copper implements accidentally found by a sailor some years ago while in the Province of Tobasco, Mexico. These implements form an important link in the chain of evidence upon the working of stone in Mexico and Central America. They are mostly tools of rather large size and show by their battered edges that they were used in cutting hard substances. Very few copper implements of any kind have been found in this region — and none, to my knowledge, like several specimens in this lot — while it has always been supposed from the evidence of the ancient pictographs that copper implements, and probably bronze also, were common in ancient times. The fact that these implements were found together makes them of the utmost importance. Toward the purchase of this collection a friend offers $250. It is hoped that the $500 still required for their purchase may be obtained.

EXPLORATIONS. — Thanks to the assistance of several friends, particularly Mrs. Warren, Mrs. Ware, Mr. C. P. Bowditch, and Mr. Stephen Salisbury, the field work has been carried on during the year in various parts of the Continent. Several explorations are still unfinished and will be better left undescribed until another year. Of others mention will now be made.

Mr. Hilborne T. Cresson devoted the early part of the season to a further examination of the gravels of Pennsylvania and Delaware, and in connection with Mr. Charles Ottey of Claymont, Delaware, explored a rock-shelter near Chelsea, Pennsylvania, where an extensive collection was obtained, for which we are largely indebted to Mr. Ottey. Later in the season Mr. Cresson and Mr. Ernest Volk joined the party in Ohio, and during the examination of the gravels along the Little Miami Valley and of the banks of the river, were rewarded by the discovery of two ancient hearths, one of which was 13 feet below the surface of the bottom land. On the burnt stones was a considerable quantity of ashes and charcoal. This is by far the oldest of the hearths which have been exposed by the action of the river, as first noticed by Dr. Metz, and whatever its age may be, it is now certain that man was living in this valley at the time when it was slowly filling with the alluvium forming the rich bottom land of the valley.

As it is of the greatest importance for future explorations that others should be trained to carry on the work after the methods by which we have already secured such important results, I this year established two camps in the valley of the Little Miami River. The first was at the Turner group, where I have been exploring nearly every season during the last ten years, with the valued coöperation of Dr. Metz, who has had charge of the work when I was not on the ground. and who continues to give all the time he can take from his professional duties. This camp was placed in charge of Marshall H. Saville on the first of June; later Mr. Ernest Volk joined him, and for a short time Mr. H. T. Cresson and Mr. Dorsey were at this camp.

Mr. Volk, before and after working in Ohio, was engaged in explorations in the Delaware Valley, where he obtained interesting results which will be mentioned in a future Report.

About twenty miles up the Little Miami from the Turner group, at the town of Fosters, the river flows south for a short distance through a deep gorge. On the west side of the river a steep ascent leads to a high, narrow plateau. This plateau is bounded on the west by a tributary known as Cline's Run, which flows southward and eastward to the river. The plateau is surrounded by the river and creek except on its northern side. Around the steep sides of this hill and cutting across the northern and part of the southern portions there is a singular structure of burnt clay and stones which has long been an object of interest in the neighborhood. For several years it has been our wish to explore this place, and finally, through the assistance of Dr. Metz — with whom I have several times visited the spot — Mr. Clemence Schimmel and Mr. George Clarke, owners of the property upon which the larger part of this ancient work is situated, kindly consented to our exploring that portion of their land. Taking Mr. Cresson and Mr. Dorsey as assistants, I established a camp within the enclosure, under the oaks, maples, and other trees of an apparently primeval forest. These trees had been preserved by the forethought of Mr. Clarke's father and are guarded by their present owner with a care quite unusual in our forest-destroying race. I remained here for nearly a month, and then left Mr. Cresson and Mr. Dorsey to do all they could until the last of September. Much of interest was discovered in relation to this singular structure, of which a somewhat detailed account is given in my full Report.

LECTURES AND INSTRUCTION. — As in former years, the Curator has given occasional lectures in the Museum, and several social meetings have been held in our halls, on which occasions he has had the pleasure of making addresses on special topics of anthropology. In this connection the meeting of the American Academy of Dental Science may be mentioned, at which a series of skulls was exhibited showing diseases of the teeth and jaws and peculiar conditions of growth and wear of teeth among the various prehistoric peoples and Indian tribes of America. Much interest was awakened in the profession by calling attention to many affections of the teeth which have been generally supposed to be effects of civilization.

The Harvard Historical Society also held a meeting in our rooms, at which time an account was given of the different prehistoric peoples of America, illustrated by specimens of their crania and works of art. At the opening of the present term, by the request of Professor Channing, a lecture was given to his class in Early American History on the peoples of this Continent before and at the time of Columbus. Several schools and classes have visited the Museum and when possible the Curator has given them explanations of the collections. In this way something has been done toward making known the plans and resources of the Museum.

During the present year three private students have been in attendance for laboratory instruction, and two from the Graduate School of the University have entered for a three-years' course for the degree of Ph.D. As this department has not heretofore been included among those in which this high degree can be obtained, no regular course of study had been planned, and therefore the following outline of a course was presented to the Faculty of Arts and Sciences, and is that upon which the studies of graduate students selecting this department will be based.

OUTLINE OF A COURSE IN AMERICAN ARCHAEOLOGY AND ETHNOLOGY FOR ADVANCED STUDENTS.

Laboratory Work. — A study of implements, utensils, and ornaments made of stone, and the methods of their manufacture. The student thus learning to identify the many kinds of stone used by primitive man for various purposes and the different methods by which desired results were obtained.

A similar study of objects made of bone, horn, ivory, shell, and other parts of animals, including identification of these parts and of the animals to which they belong; thus requiring of the student a knowledge of the principal groups of animals and particularly of comparative osteology. Also the study of various objects made of wood.

A study of textile fabrics of prehistoric times; the methods of plaiting, braiding, and weaving; the identification of animal and vegetable substances used for these purposes. The student thus learning to use the lens and the microscope and acquiring some knowledge of the tissues of animals and plants.

The methods of the manufacture of pottery; including a study of the different clays and their combination with various materials, and the several ways of forming vessels and other pottery objects.

The determination of ores and metals, the manner of working them, and the methods of manufacture into implements, ornaments, etc.

The study of decoration — plastic work, cutting, carving, painting, and plaiting; the methods and materials used, etc., etc.

The physical characteristics of man as determined by a comparative study of his bones. Craniology, anthropometry, and the determination of races and varieties of man so far as possible from his bony structure, etc.

Museum Work. — How to handle and use specimens. Plan of the arrangement of the Museum. Labelling, numbering, cataloguing, etc. Thus teaching the student how to make use of the Museum and enabling him to find and properly use specimens required for the next part of his work.

Comparative Archaeology. — The student is required to make a comparative study of objects from various parts of America and of other countries. Thus leading to a study of the migrations of peoples as indicated by the remains of their handiwork.

The Evidence of the Antiquity of Man. — Including instruction in geology with particular reference to the formation of gravel-beds, peat-bogs, the cutting of river valleys, the formation of caves, etc.

Field Work. — Comprising surface geology, the exploration of shell-heaps and other refuse-piles, old village-sites, burial-places, mounds, earthworks, etc., and, when possible, of the ruins of cliff-dwellings and pueblos of the south-west, and of the ancient stone structures of Mexico and Peru. This is supplemented by the study of photographs, drawings, and casts of such structures as the student may be unable to visit; all leading to a study of the conditions under which man has lived in America; his home life; and also the development of architecture.

ETHNOLOGY. — A study of the native peoples of the American Continent; their skeletons, customs, manner of life, dwellings, arts, traditions, myths, religions, pictographs, languages, etc. This part of the course — excepting the study of weapons and other implements, utensils, ornaments, customs, and skeletons in the Museum — is largely confined to special reading of some of the early writers relating to America and of works on the customs, myths, religions, and languages of the American peoples.

Instruction in the Museum is supplemented by lectures and talks to the students, and the work is guided and directed both in the Museum and in the field. Students are required to make drawings of specimens studied, also to write descriptions of objects, and to draw to scale and report in full upon earthworks, etc., observed in the field.

The course here briefly outlined is intended to give the graduate student as thorough training in American Archaeology and Ethnology as is possible in a three-years' course of study and to prepare him for carrying on independent research.

F. W. PUTNAM,
Peabody Professor of American Archaeology and Ethnology.

THE VISITING COMMITTEE. — The reorganization of the Visiting Committees appointed by the Board of Overseers, by which a Special Committee was assigned to this department, has proved of great importance in advancing the diversified interests of the Museum. The Committee, consisting of Mr. Augustus Hemenway, Dr. Francis M. Weld, Mr. Charles P. Bowditch, Professor Henry W. Haynes, Mr. T. Jefferson Coolidge, Jr., and Dr. J. Walter Fewkes, has held regular meetings at the Museum and in Boston, at which the welfare of the Museum has been discussed and various plans for the advancement of this department of the University have been considered. In full sympathy with my hopes that assistants may be trained to aid in the care of the Museum, Mr. Bowditch and Dr. Weld have agreed to furnish $500 a year for three years as a fellowship for a student-assistant. This fellowship is now held by Mr. Marshall H. Saville, who has been a special student with me for nearly two years.

Through the influence of the Visiting Committee, Mrs. Mary Hemenway has also made an offer of $10,000 for the foundation of another fellowship to be held by a graduate student in this department. This offer is subject to certain conditions, to be accepted by the Corporation, looking to the full acknowledgment of this department as open to graduate students. The Committee have other plans in contemplation which will still further advance this department of the University, and we cannot be too grateful for their cordial support in our undertakings.

THE THAW FELLOWSHIP. — Another most gratifying incident of the year is the recent gift of $30,000 for a fellowship fund by Mrs. Mary Copley Thaw of Pittsburgh, Pennsylvania. While this foundation is primarily due to her appreciation of the important labors of Miss Alice C. Fletcher among the Indians, yet the Museum would not have been selected as the medium for carrying out her generous intentions, nor would the gift have been made a perpetual fellowship, had not Mrs. Thaw been fully convinced of the importance of the work done under the direction of this Museum. The gift is all the more gratifying to us because it comes from a distant source, and also because Miss Fletcher has been associated with the Museum as a special assistant during all her noble work among the Indians.

The following is a copy of the letter of trust: —

PITTSBURGH, Pa., October 1, 1890.

TO THE TRUSTEES OF THE PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY, CAMBRIDGE, MASS.

GENTLEMEN: — It is my wish to aid and further the philanthropic and scientific work of Miss Alice C. Fletcher among the North American Indians.

This work has been successfully carried on by Miss Fletcher for many years, as well for the advancement of the Indians as for the enlightenment of the American people.

I do, therefore, herewith give to Robert C. Winthrop, Henry Wheatland, Francis C. Lowell, Stephen Salisbury, Samuel H. Scudder, Joseph Lovering, and Frederic W. Putnam, all of Massachusetts, and their successors, "TRUSTEES OF THE PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY IN CONNECTION WITH HARVARD UNIVERSITY," thirty (30) bonds of the Girard Point Storage Company of Philadelphia, Pa., Nos. 335 to 364 inclusive, each for the sum of one thousand ($1000) dollars, principal dated April 1, 1890, and payable fifty years after the date thereof, with interest thereon at the rate of three and one half per centum per annum, payable semi-annually, being in the aggregate the sum of thirty thousand ($30,000) dollars principal; to be held as a trust for the following purposes:

The full income of the fund to be paid regularly as a salary to Miss Alice C. Fletcher during her life, or so long as she may continue to carry on such work as I have here indicated in a manner satisfactory to the Trustees of the Museum; it being understood that in case of her inability to carry on the work, whether by cause of sickness or from old age, the income of the fund shall continue to be paid to her.

In the event of the death of Miss Alice C. Fletcher, I hereby direct that the income of the fund shall be thereafter devoted to the payment of the salary of such person as shall be appointed by the Trustees of the Museum to succeed Alice C. Fletcher to carry on the same line of work and research relating to the Indian race of America or other ethnological and archaeological investigations.

It is my wish that in memory of my late husband, William Thaw, who was so much interested in the philanthropic and scientific labors of Miss Fletcher, this Trust Fund should be invested and known as "The Thaw Fellowship Fund."

The said Trustees do hereby accept the trust hereinbefore set forth and defined, and do hereby acknowledge to have received the bonds hereinbefore mentioned.

WITNESS the hands and seals of the parties the day and year first aforesaid.

ATTEST: MARY COPLEY THAW.
As to MRS. MARY C. THAW, WILLIAM THAW, JR.

LIBRARY AND PUBLICATIONS. — As the scope of our library is necessarily limited, and we seldom purchase a book, its growth is slow. This is of less importance, however, than would be the case if the General Library of the University did not furnish us with catalogue-cards of all volumes and papers pertaining to archaeology, ethnology, and kindred subjects received at the General Library. Six hundred and twenty-four catalogue-cards, including books and pamphlets received by our own library and catalogued by the General Library, have been added during the year. We have received seventy volumes and sixty-nine pamphlets as gifts from thirty-seven persons and fifty-eight institutions in various parts of the world and have purchased eight other volumes. Thirty photographs have been given by ten persons. The library is open for consultation to any member of the University and volumes are often loaned for special purposes.

Of the Special Papers, the 2nd and 3rd numbers are now in press and will soon be issued. The 2nd is a Memoir and Vocabulary of the Karankawa Indians by Mr. Albert S. Gatschet and others. The 3rd comprises a valuable Memoir by Mrs. Zelia Nuttall on the Atlatl or Spear-thrower of the Ancient Mexicans, illustrated by three plates.

Gifts of Money. — In no former year have the friends of the Museum been so generous in giving their aid. Gifts for current expenses have been received which, in the sum total, exceed the regular income from our funds, while the endowment of the William Thaw Fellowship has added $30,000 to the amount held in trust. The gifts for immediate use have been as follows: —

From	Mrs. Susan C. Warren, Boston, for cases	$5,000.00
	and for explorations	2,000.00
"	Mrs. Elizabeth C. Ware, Boston, for explorations	1,000.00
"	Capt. Nathan Appleton, Boston, for explorations	100.00
"	Hon. Robert C. Winthrop, for salary of assistant	100.00
"	Dr. Francis M. Weld, Jamaica Plain, for salary of assistant	25.00
"	Mrs. N. E. Baylies, New York, for salary of assistant	25.00
"	New England Telephone Co., Boston, for Museum expenses	28.00
		$8,278.00

Although in earlier years a few gifts were made to the Museum in the form of collections purchased and presented — notably the Nicolucci collection from Italy, by the Hon. Theodore Lyman — and many gifts of collections of great pecuniary value have been received from time to time, yet the first gift of money to be expended in carrying on the work of the Museum was that of Dr. Wm. Mack in 1881.

In 1881.	— Dr. William Mack of Salem, aided a special exploration by the gift of	$75.00
In 1882.	— In response to a circular letter asking assistance for the explorations in Ohio and Tennessee, and by the personal interest of Mr. Theodore Lyman and the late John C. Phillips, both Trustees at the time, there was received from eleven ladies and gentlemen	3,350.00
	There was also received toward the salary of an assistant.	225.00
	and in aid of Miss Fletcher's researches among the Indians	550.00
In 1883.	— There was received for explorations	555.00
	and toward an assistant's salary	33.00
In 1884.	— For explorations	720.00

In 1885. —	For explorations	5.00
	and for current expenses of the Museum	16.33
In 1886. —	For explorations	2,725.00
	For Museum expenses	28.00
In 1887. —	For explorations, including $500 in memory of a friend who had contributed generously to this work	635.00
	For Museum expenses	14.00
In 1887–9. —	The Serpent Mound fund for the purchase and exploration of the Serpent Mound and its surroundings	8,738.00
In 1888. —	For explorations	1,005.00
	For publications	125.00
	For Museum expenses	28.00
In 1889. —	For purchase of South American collection	500.00
	For Museum expenses	21.00
	For publications (subscriptions)	175.00
In 1890. —	(As above stated in detail), for explorations	3,100.00
	For cases	5,000.00
	For salary of assistant	150.00
	For Museum expenses	28.00
	Making a total received for current expenses	$27,801.33

When we recall that the permanent fund for the support of the Museum gives an income of only $2376 a year for all expenses of heating and care of the building — which is open to the public throughout the year with the exception of Sundays and holidays — as well as all incidental expenses relating to the increase and care of the collections, we can realize how little we could accomplish were it not for the generosity of friends who have given us, on an average, $3089 a year during the past nine years. Moreover, until some benefactor adds largely to our permanent funds we shall be entirely dependent on continuous aid of this kind for the means of keeping the Museum in the advanced position it now holds.

I am glad to add that the contributions have already begun for the new year by the receipt of $500 on account of the Visiting Committee fellowship and $100 for explorations. Neither of these sums appear in the statement made above.

The following is a summary of the expenses for the year: —

Building, repairs, furniture, and incidentals	$1,145.06
Cases	2,361.95
Fuel, gas, and water	411.55
Postage, express, and telephone	378.20
Library, publications, photographing, etc.	248.59
Incidentals	93.50
Explorations	3,158.20
Salaries	4,107.63
	$11,904.68

Respectfully submitted,

F. W. PUTNAM,

Peabody Professor of American Archaeology and Ethnology, and Curator of the Museum.

Cambridge, Dec. 2, 1890.

APPENDIX.

RESIGNATIONS.

Francis Bowen, Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity, October 7, 1889, to take effect September 1, 1889.

Frank Beverly Williams, Instructor in Political Economy, October 7, 1889.

William Francis Ganong, Assistant in Botany, October 28, 1889.

Daniel William Shea, Assistant in Physics, October 28, 1889.

Gustavus Hay, Member of the Boylston Medical Prize Committee, November 11, 1889.

Otis Kimball Newell, Assistant Demonstrator of Anatomy, November 25, 1889, to take effect December 1, 1889.

William Albert Keener, Story Professor of Law, March 10, 1890, to take effect September 1, 1890.

Patrick William Moriarty, Assistant Demonstrator of Operative Dentistry, March 17, 1890.

Robert Willard Greenleaf, Assistant in Histology and Embryology, May 12, 1890.

William Fiske Whitney, Secretary of the Medical Faculty, May 12, 1890, to take effect September 1, 1890.

Alexander Agassiz, Fellow of the Corporation, September 23, 1890.

APPOINTMENTS.

[UNLIMITED, OR FOR TERMS LONGER THAN ONE YEAR.]

William Barker Hills, to be Associate Professor of Chemistry, October 7, 1889.

Francis Bowen, to be Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity, Emeritus, October 28, 1889.

George Herbert Palmer, to be Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity, October 28, 1889.

William James, to be Professor of Psychology, November 11, 1889.

Dudley Allen Sargent, to be Director of the Hemenway Gymnasium, November 25, 1889.

Jeremiah Smith, to be Story Professor of Law, March 31, 1890.

Thomas J. Kiernan, to be Assistant in the Library from November 12, 1877, April 28, 1890.

Samuel Williston, to be Assistant Professor of Law for five years from September 1, 1890, April 28, 1890.

Amos Lawrence Mason, to be Assistant Professor of Clinical Medicine for five years from September 1, 1890, May 12, 1890.

Edward Campbell Beckett, to be Superintendent of the Veterinary Hospital for three years from July 1, 1890, May 12, 1890.

Bigelow Tarbell, to be Instructor in Greek and Latin, May 26, 390.

e Belknap Marcou, to be Tutor in French for three years from September 1, 1890, May 26, 1890.

t Lawrence Smith,
s Eliot Norton,
s Joyce White,
Herbert Palmer,
rowbridge,
m Morris Davis,
m Elwood Byerly,
s Rockwell Lanman,
Marcus Macvane,
enry Wright,
Alonzo Bartlett,
e Cohn,
Lyman Kittredge,
n Snow,
Whipple Huntington,
Hicky Morgan,
to be Members of the Administrative Board of Harvard College, June 9, 1890.

ld Scott Chaplin,
iel Southgate Shaler,
Barker Hill,
Herbert Hall,
in Osgood Peirce,
arl Günther von Jagemann,
liot Wolff,
to be Members of the Administrative Board of the Lawrence Scientific School, June 9, 1890.

Mills Peirce,
ic De Forest Allen,
m Gilson Farlow,
m James,
s Loring Jackson,
Laurens Mark,
Gordon Lyon,
Stevens Sheldon,
Channing,
William Taussig,
to be Members of the Administrative Board of the Graduate School, June 9, 1890.

on Russell Briggs, to be Professor of English from September 1, 1890, une 9, 1890.

m Morris Davis, to be Professor of Physical Geography from September 1, 1890, June 9, 1890.

Lyman Kittredge, to be Assistant Professor of English for five years om September 1, 1890, June 9, 1890.

Pierce Baker, Jr., to be Instructor in English, June 9, 1890.

Edward Gates, to be Instructor in English, June 9, 1890.

t Lawrence Smith, to be Dean of Harvard College, June 23, 1890.

d Scott Chaplin, to be Dean of the Lawrence Scientific School, June 3, 1890.

Mills Peirce, to be Dean of the Graduate School, June 23, 1890.

Hanes Smith, to be Instructor in Orthodontia for three years from eptember 1, 1890, June 23, 1890.

For 1890-91.

Brooke Herford,
Lyman Abbott,
Phillips Brooks,
William Lawrence,
Henry Van Dyke,
to be Preachers to the University, May 12, 1890.

Heman White Chaplin, to be Lecturer on Criminal Law, March 31, 1890.
Joseph Henry Beale, to be Lecturer on the Law of Damages, April 28, 1890.
Frank Brewster, to be Instructor in the Peculiarities of Massachusetts Law and Practice, May 12, 1890.

Max Poll, to be Instructor in German, May 26, 1890.
Daniel Denison Slade, to be Lecturer on Comparative Osteology, June 9, 1890.
John Graham Brooks, to be Instructor in Political Economy, June 9, 1890.
Jefferson Butler Fletcher, to be Instructor in English, June 9, 1890.
William Francis Ganong, to be Instructor in Botany, June 9, 1890.
Thaddeus William Harris, to be Instructor in Geology, June 9, 1890.
John Joseph Hayes, to be Instructor in Elocution, June 9, 1890.
Lewis Jerome Johnson, to be Instructor in Engineering, June 9, 1890.
Henry Burrowes Lathrop, to be Instructor in English, June 9, 1890.
James Lee Love, to be Instructor in Mathematics, June 9, 1890.
Alfred Bull Nichols, to be Instructor in German, June 9, 1890.
Frank Walter Nicolson, to be Instructor in Latin, June 9, 1890.
William Fogg Osgood, to be Instructor in Mathematics, June 9, 1890.
George Howard Parker, to be Instructor in Zoölogy, June 9, 1890.
Wallace Clement Sabine, to be Instructor in Physics, June 9, 1890.
George Santayana, to be Instructor in Philosophy, June 9, 1890.
William Schofield, to be Instructor in Roman Law, June 9, 1890.
William Goodrich Thompson, to be Instructor in Forensics, June 9, 1890.
William Emerson Ritter, to be Assistant in Zoölogy, June 9, 1890.
William McMichael Woodworth, to be Assistant in Microscopical Anatomy, June 9, 1890.
Frank John Viets Dakin, to be Assistant in Fine Arts, June 23, 1890.
Edward Hale, to be Assistant in Homiletics, June 23, 1890.
Louis Leverett Hooper, to be Assistant in Physics, June 23, 1890.
Henry Hudson, to be Assistant in Physics, June 23, 1890.
George James Peirce, to be Assistant in Botany, June 23, 1890.
Charles Averell Rich, to be Assistant in Physics, June 23, 1890.
Theodore William Richards, to be Assistant in Chemistry, June 23, 1890.
William Morse Cole, to be Instructor in Political Economy, June 25, 1890.

Henry Thomas Secrist, to be Proctor, June 9, 1890.

John Cassan Wait, to be Instructor in Surveying and Drawing, June 9, 1890.

Samuel Holmes Durgin, to be Lecturer on Hygiene, June 9, 1890.

Theodore Willis Fisher, to be Lecturer on Mental Diseases, June 9, 1890.

Edward Hickling Bradford, to be Instructor in Surgery and Orthopedics, June 9, 1890.

Edward Marshall Buckingham, to be Instructor in Diseases of Children, June 9, 1890.

Elbridge Gerry Cutler, to be Instructor in the Theory and Practice of Physics, June 9, 1890.

Francis Henry Davenport, to be Instructor in Gynaecology, June 9, 1890.

Harold Clarence Ernst, to be Instructor in Bacteriology, June 9, 1890.

William Whitworth Gannett, to be Instructor in Pathology and Auscultation, June 9, 1890.

George Minot Garland, to be Instructor in Clinical Medicine, June 9, 1890.

Charles Montraville Green, to be Instructor in Obstetrics, June 9, 1890.

Franklin Henry Hooper, to be Instructor in Laryngology, June 9, 1890.

James Jackson Putnam, to be Instructor in Diseases of the Nervous System, June 9, 1890.

Henry Parker Quincy, to be Instructor in Histology, June 9, 1890.

Herman Frank Vickery, to be Instructor in Clinical Medicine, June 9, 1890.

Joseph Weatherhead Warren, to be Instructor in Physiology, June 9, 1890.

Arthur Tracy Cabot, to be Clinical Instructor in Genito-urinary Surgery, June 9, 1890.

Edward Cowles, to be Clinical Instructor in Mental Diseases, June 9, 1890.

Orlando Witherspoon Doe, to be Clinical Instructor in Gynaecology, June 9, 1890.

George Washington Gay, to be Clinical Instructor in Surgery, June 9, 1890.

Francis Boott Greenough, to be Clinical Instructor in Syphilis, June 9, 1890.

John Homans, to be Clinical Instructor in the Diagnosis and Treatment of Ovarian Tumors, June 9, 1890.

Philip Coombs Knapp, to be Clinical Instructor in Diseases of the Nervous System, June 9, 1890.

Abner Post, to be Clinical Instructor in Syphilis, June 9, 1890.

George Horton Tilden, to be Clinical Instructor in Dermatology and Syphilis, June 9, 1890.

Oliver Fairfield Wadsworth, to be Clinical Instructor in Ophthalmoscopy, June 9, 1890.

George Lincoln Walton, to be Clinical Instructor in Diseases of the Nervous System, June 9, 1890.

Francis Sedgwick Watson, to be Clinical Instructor in Genito-urinary Surgery, June 9, 1890.

Herbert Leslie Burrell, to be Demonstrator of Surgical Appliances, June 9, 1890.

Francis Augustine Harris, to be Demonstrator of Medico-legal Examinations, June 9, 1890.

William Merritt Conant, to be Assistant Demonstrator of Anatomy, June 9, 1890.

William Sohier Bryant, to be Assistant in Anatomy, June 9, 1890.

Herbert Leslie Burrell, to be Assistant in Clinical Surgery, June 9, 1890.

John Wheelock Elliot, to be Assistant in Clinical Surgery, June 9, 1890.

William Carroll Emerson, to be Assistant in Chemistry, June 9, 1890.

Frank Bishop Harrington, to be Assistant in Clinical Surgery, June 9, 1890.

George Howard Monks, to be Assistant in Clinical and Operative Surgery, June 9, 1890.

John Cummings Munro, to be Assistant in Anatomy, June 9, 1890.

Edward Reynolds, to be Assistant in Obstetrics, June 9, 1890.

Charles Locke Scudder, to be Assistant in Clinical Surgery, June 9, 1890.

Thomas Foster Sherman, to be Assistant in Diseases of Children, June 9, 1890.

Charles Pratt Strong, to be Assistant in Gynaecology, June 9, 1890.

Charles Wendell Townsend, to be Assistant in Obstetrics, June 9, 1890.

Francis Sedgwick Watson, to be Assistant in Clinical Surgery, June 9, 1890.

Charles Francis Withington, to be Assistant in Clinical Medicine, June 9, 1890.

Charles Pomeroy Worcester, to be Assistant in Chemistry, June 9, 1890.

Charles Pomeroy Worcestkr, to be Secretary of the Medical Faculty, June 23, 1890.

Frederick Eugene Banfield,
Allston Gray Bouvé,
Forest Greenwood Eddy,
Virgil Clarence Pond,
Charles Hutchins Taft,
to be Instructors in Operative Dentistry, June 23, 1890.

Edward Earl Hopkins, to be Instructor in Crown and Bridge Work, June 23, 1890.

George Howard Monks, to be Instructor in Surgical Pathology, June 23, 1890.

George Lincoln Walton, to be Instructor in Neurology, June 23, 1890.

Charles Pomeroy Worcester, to be Instructor in Dental Chemistry, June 23, 1890.

Dwight Moses Clapp, to be Clinical Lecturer in Operative Dentistry, June 23, 1890.

William Parker Cooke,
William Henry Potter,
Cecil Porter Wilson,
to be Clininical Lecturers in Operative Dentistry, June 23, 1890.

Henry Michael Clifford, to be Demonstrator of Operative Dentistry, June 23, 1890.

Patrick William Moriarty, to be Demonstrator of Mechanical Dentistry, June 23, 1890.

Edwin Hartley Dixon,
William Frederic Gay,
Charles Ernest Perkins,
to be Assistant Demonstrators of Operative Dentistry, June 23, 1890.

Wilbert Soule, to be Resident Surgeon at the Veterinary Hospital, May 12, 1890, to take effect July 1, 1890.

STATUTES ADOPTED BY THE CORPORATION (MAY 12) AND THE BOARD OF OVERSEERS (MAY 21).	FORMER STATUTES.
1. THE UNIVERSITY. Harvard University comprehends the following departments: Harvard College, the Lawrence Scientific School, the Graduate School, the Divinity School, the Law School, the Medical School, the Dental School, the School of Veterinary Medicine, the Bussey Institution (a School of Agriculture), the University Library, the Museum of Comparative Zoölogy, the University Museum, the Botanic Garden, the Herbarium, and the Astronomical Observatory. The Peabody Museum of American Archaeology and Ethnology is a constituent part of the University; but its relations to the University are affected by peculiar provisions.	1. THE UNIVERSITY. Harvard University comprehends the following departments: Harvard College, the Divinity School, the Law School, the Medical School, the Dental School, the Lawrence Scientific School, the Museum of Comparative Zoölogy, the Bussey Institution (a School of Agriculture), the College Library, the Graduate Department, the School of Veterinary Medicine, and the Astronomical Observatory. The Peabody Museum of American Archaeology and Ethnology is a constituent part of the University; but its relations to the University are affected by peculiar provisions.
5. UNIVERSITY COUNCIL. The University Council consists of the President, Professors, and Assistant Professors of the University and such other University officials as the Corporation with the consent of the Overseers may appoint members of the Council. It is the function of the Council to consider questions which concern more than one Faculty, and questions of University policy.	5. ACADEMIC COUNCIL. The Academic Council consists of the President, Professors, and Assistant Professors of the University. The Council is empowered to recommend to the President and Fellows candidates for the degrees of Master of Arts, Doctor of Science, and Doctor of Philosophy.
6. FACULTIES. Harvard College, the Lawrence Scientific School, and the Graduate School are together under the immediate charge of a Faculty, — the Faculty of Arts and Sciences. The other Schools of the University are each under the immediate charge of a Faculty. Each Faculty is composed of all the Professors, Assist-	6. FACULTIES. Harvard College and the several Schools of the University are each under the immediate charge of a Faculty. All Professors, Assistant Professors, and Tutors, and all Instructors appointed for a term longer than one year are members of the Faculty of the College or School in which they teach, unless exempted by a

ant Professors, and Tutors, and of all the Instructors appointed for a term longer than one year, who teach in the department or departments under the charge of that Faculty. The President is a member of each Faculty

A Faculty may, at its discretion, delegate any of its powers relating to ordinary matters of administration and discipline, except the power to inflict the penalties of dismission and expulsion, to administrative boards, nominated from among its members by the President, and appointed by the Corporation with the consent of the Overseers. Every such board shall be subject to the authority of the Faculty from which it is appointed. Any administrative board established for Harvard College shall consist of not less than fifteen members.

7. DEANS. Each Faculty has a Dean, who is appointed by the Corporation, with the consent of the Overseers, from among the members of the Faculty. Harvard College, the Lawrence Scientific School, and the Graduate School also have each a Dean, who is appointed by the Corporation, with the consent of the Overseers, from among the members of the Faculty of Arts and Sciences. Each Dean is the chief executive officer of his Faculty, College, or School, is responsible for the proper preparation and conduct of its business, and makes an annual report to the President.

9. DEGREES. The ordinary degrees of Bachelor of Arts, Bachelor of Science, Master of Arts, Civil Engineer, Doctor of Philosophy, Doctor of Science, Bachelor of Divinity, Bachelor of Laws, Doctor of Medicine, Doctor of Dental Medicine, Doctor of Veterinary Medicine, and Bachelor of Agricultural Science are conferred,

peculiar tenure of office, or by a special vote of the Corporation and Overseers.

7. DEANS. Each Faculty has a Dean, who is appointed by the Corporation, with the consent of the Overseers, from among the members of that Faculty. It is the duty of a Dean to conduct the correspondence of his College or School, to superintend all its clerical and administrative business; to prepare the business for the meetings of his Faculty, to execute its orders and regulations, to preside at its meetings in the absence of the President, and to make an annual report to the President. To assist the Dean of a College or School in the discharge of these duties, the Corporation appoints, when necessary, a Registrar or Secretary.

9. DEGREES. The ordinary degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Agricultural Science, Bachelor of Divinity, Bachelor of Laws, Doctor of Medicine, Doctor of Dental Medicine, Doctor of Veterinary Medicine, Civil Engineer, and Mining Engineer are conferred, after recommendation by the several Faculties,

after recommendation by the several Faculties, by vote of the Corporation, with the consent of the Overseers. It is required that no candidate for the ordinary degrees be recommended, except after thorough public examination, and a residence at the University of at least one year. There are four grades of the degree of Bachelor of Arts, two grades of the degree of Bachelor of Laws, and three grades of the degree of Bachelor of Science.

Honorary degrees are conferred by vote of the Corporation, with the consent of the Overseers. The degrees conferred by the University are announced at Commencement.

12. Discipline. The several Faculties have authority to impose fines and levy assessments for damage done to property; to inflict, at their discretion, the penalties of admonition, suspension, dismission, and expulsion; and to use all other appropriate means of discipline; but no student shall be dismissed or expelled from the University except by a vote of at least two thirds of the members of his Faculty present and voting thereon.

Suspension is a separation from the University for a fixed period of time. It may be accompanied with a requirement of residence in a specified place, and of the performance of specified tasks. Dismission closes a student's connection with the University, without necessarily precluding his return. Expulsion is the highest academic censure, and is a final separation from the University.

by vote of the Corporation, with the consent of the Overseers. The ordinary degrees of Master of Arts, Doctor of Philosophy, and Doctor of Science, are conferred, after recommendation of the Academic Council, by vote of the Corporation, with the consent of the Overseers. It is required that no candidates for the ordinary degrees be recommended, except after thorough public examination, and a residence at the University of at least one year. There are four grades of the degree of Bachelor of Arts, two grades of the degree of Bachelor of Laws, and three grades of the degree of Bachelor of Science and of the degree of Mining Engineer.

Honorary degrees are conferred by vote of the Corporation, with the consent of the Overseers. The degrees conferred by the University are announced at Commencement.

12. Discipline. The respective Faculties have authority to impose fines and levy assessments for damage done to property; to inflict, at their discretion, the penalties of admonition, suspension, dismission, and expulsion; and to use all other appropriate means of discipline; but no student shall be separated from the University, either temporarily or permanently, by a vote of less than two thirds of the members of his Faculty present and voting thereon.

Suspension is a separation from the University for a fixed period of time. It may be accompanied with a requirement of residence in a specified place, and the performance of specified tasks. Dismission closes a student's connection with the University, without necessarily precluding his return. Expulsion is the highest academic censure, and is a final separation from the University.

Table of Schools and Colleges from which young men actually entered Harvard College from 1881 to 1890 inclusive, with the number that entered from each institution in each year. Special students are not included. An asterisk (*) indicates a public school, a dagger (†) an endowed school.

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Acadia College, Wolfville, Nova Scotia	2	1	.	.	1	.	.	1	1	1
†Adams Academy, Quincy	12	13	19	11	1	2	10	2	9	2
Adelbert College of W. R. Univ., Cleveland, O.	.	1	.	.	.	.	.	.	.	1
†Adelphi Academy, Brooklyn, N. Y.	.	.	.	.	1	1	1			
†Albany, N. Y., Academy	.	.	.	1	.	.	.	2	2	
*Albany, N. Y., High School	.	1	1							
Albion College, Mich.	.	.	.	.	.	.	.	.	1	
Alfred, N. Y., University	.	.	1							
Amherst College	1	.	.	.	1	2	1	.	1	3
Andover Theological Seminary	.	.	.	.	.	1	.	.	1	1
*Arlington, Cotting High School	1	1	1	2	2	.	.	2	.	3
Atlanta University, Georgia	.	.	.	.	.	.	.	.	.	1
*Auburn, Me., Edward Little High School	.	.	.	.	.	.	.	1		
*Auburn, N. Y., High School	.	.	.	.	.	.	.	.	1	
*Augusta, Me., Cony High School	.	.	.	.	.	.	1			
Augustana College, Rock Island, Ill.	.	.	.	.	.	1	.	.	.	1
†Barre Academy	1									
Baugher's Academy, Hanover, Pa.	.	.	1							
Belmont School, Belmont, Cal.	.	.	.	.	.	4	2	.	1	
Belmont School, Belmont, Mass.	.	.	.	.	.	.	.	.	.	2
Berkeley Gymnasium, San Francisco, Cal.	.	.	1							
Berkeley School, Boston	.	.	.	.	1	.	1	1	5	3
Berkeley School, New York	1	.	1	.	6	2	6	4	4	1
Berkeley School, Providence, R. I.	.	.	.	.	.	.	.	.	1	
†Berwick Academy, South Berwick, Me	.	.	.	.	.	.	.	.	.	1
Bethany College, W. Va.	.	.	.	.	1					
Boston College	.	.	.	.	.	.	.	.	1	
*Boston English High School	.	.	.	.	.	.	4	5	4	7
*Boston Latin School	17	17	20	21	17	25	31	25	28	25
Boston University	.	.	.	1	.	2	1	.	4	
Bowdoin College, Brunswick, Me.	.	.	.	.	.	.	.	.	.	1
†Brackett Academy, Greenland, N. H.	.	1								
*Bridgewater High School	2									
†Bristol Academy, Taunton	1	1	3	.	3	.	.	1		
†Bromfield School, Harvard	.	.	.	1						
*Brookfield High School	.	.	1							
*Brookline High School	2	2	.	.	.	2	.	.	4	
Brooklyn, N. Y., Latin School	.	.	.	.	.	.	.	.	.	2
Brown, H. H., Private School, Philadelphia, Pa.	.	.	1	.	.	.	.	.	1	
Brown University, Providence, R. I.	.	1	.	.	1	.	.	.	1	1
Browne & Nichols, Private School, Cambridge	.	.	.	.	1	3	3	6	11	6
Bucknell University, Lewisburg, Pa.	.	.	.	.	.	.	.	1		
*Buffalo, N. Y., High School	.	1	.	1	.	.	.	.	2	
Buffalo, N. Y., Latin School	.	.	.	2	1	.	.	1	1	
*Buffalo, N. Y., State Normal School	.	.	.	.	.	.	.	1		
†Burr & Burton Seminary, Manchester, Vt.	.	.	.	.	.	.	.	.	1	
*Cambridge Latin School	11	8	8	5	11	14	4	14	14	13

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Carleton College, Northfield, Minn.	.	.	.	.	.	.	.	.	1	2
*Castine, Me., High School	.	.	1							
Centre College, Danville, Ky.	.	.	.	.	.	.	1			
Chadwick & Pye, Boys' Prep. Sch., Brooklyn, N. Y.	.	1								
Charleston, S. C., College of	.	.	.	.	.	.	.	.	1	
Charlier Institute, New York	.	1								
Chase, R. H., Private School, Philadelphia, Pa.	.	3	2	1						
Chauncy Hall School, Boston	2	3	2	1	2	2	1	1	.	4
*Chelsea High School	2	2	.	2	.	2	2	2	4	1
*Chicago, Ill., High School	.	.	.	.	.	.	1			
Christian College, Monmouth, Ore.	.	1								
*Cincinnati, O., Hughes High School	.	.	.	.	1	.	.	.	.	2
*Cincinnati, O., Woodward High School	.	1	1	.	3	1	.	1	1	
Cleveland, O., Academy	.	.	.	2						
*Cleveland, O., Central High School	1	2	1	.	.	3	.	.	.	1
*Cleveland, O., West High School	.	1	.	1	1	.	1	1		
†Colby Academy, New London, N. H.	.	1								
Colby University, Waterville, Me.	1	.	.	.	.	.	.	.	.	1
College of the City of New York	.	.	.	.	3	.	.	2	1	1
College of Emporia, Kan.	.	.	.	.	.	.	.	.	.	1
College of New Jersey, Princeton, N. J.	.	.	.	2	.	.	.	1		
†Collegiate and Polytech. Institute, Brooklyn, N. Y.	2	1	1	1	1	.	2	.	.	3
Colorado College, Colorado Springs, Colo.	.	.	.	.	.	.	1			
Columbia College, New York	.	.	1	1	.	.	.	1	1	
Columbia College School of Mines, New York	.	.	.	.	.	.	.	1		
Columbian University, Washington, D. C.	.	1	.	.	.	.	1	1		
*Concord High School	.	3	2	.	.	.	.	2	.	1
Cornell College, Mt. Vernon, Iowa	.	.	.	.	.	.	.	.	.	1
Cornell University, Ithaca, N. Y.	.	.	.	.	.	1	.	.	.	1
†Corning, N. Y., Free Academy	.	1								
†Cushing Academy, Ashburnham	.	.	.	.	.	1				
Cutler, A. H., Private School, New York	2	1	4	1	.	2	2	1	4	3
Cutler, Edward H., Private School, Newton	.	.	.	.	.	.	.	2	5	7
Dalhousie College, Halifax, N. S.	.	.	.	.	.	.	.	.	1	3
Dartmouth College, Hanover, N. H.	.	.	.	.	.	.	.	.	1	
Dearborn Morgan School, Orange, N. J.	.	.	.	2	.	1	.	.	3	
*Decatur, Ill., High School	.	.	.	.	2					
Delaware College, Newark, Del.	.	.	.	1						
Denison University, Granville, O.	.	.	.	.	.	.	.	.	.	1
*Denver, Colo., High School	.	.	.	1	.	.	2	1		
†Derby Academy, Hingham	.	1								
Dickinson College, Carlisle, Pa.	1	.	.	.	.	.	.	.	.	1
†Dickinson High Sch. & Deerfield Acad., Deerfield	.	.	.	.	.	1				
*Dorchester High School	.	1	.	.	.	.	.	.	.	1
Drury College, Springfield, Mo.	.	.	.	.	.	.	.	1		
†Dummer Academy, South Byfield	.	.	1	.	3					
Dwight School, New York	.	.	.	.	.	.	.	.	.	1
†East Maine Conference Seminary, Bucksport, Me.	.	.	.	.	1					
Eayrs, Wm. N., Private School, Boston	.	.	.	.	.	.	.	.	2	
*Elkhart, Ind., High School	.	.	.	.	.	1				
*Ellsworth, Me., High School	.	.	.	.	.	1				
Emerson Institute, Washington, D. C.	.	1	1	4	2	.	1			
Eminence College, Ky.	.	.	.	.	.	.	.	.	1	
Episcopal Theological School at Cambridge	.	.	.	.	.	.	1	.	.	1
†Eton College, England	1	.	.	1						
Eureka College, Eureka, Ill.	.	.	.	.	.	.	.	1	.	1
*Everett High School	.	.	.	.	.	.	.	.	.	1
Everson, D. S., Collegiate School, New York	.	1	.	.	1	.	1			

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
*Fall River, B. M. C. Durfee High School	.	2	.	.	.	.	.	1	1	1
Fish, C. E., Private School, Worcester	.	.	.	.	.	.	.	.	1	5
Fisk University, Nashville. Tenn.	.	.	.	.	.	.	.	1		
*Fitchburg High School	.	.	.	.	.	1	1	1		
Fort Hill School, Rochester. N. Y.	.	.	.	.	.	.	1	.	.	1
*Fort Wayne, Ind., Central Grammar School	1									
*Framingham High School	.	1	.	.	1	.	.	.	.	1
Frankfurt Gymnasium, Germany	.	.	.	.	.	.	.	1		
Franklin and Marshall College, Lancaster, Pa.	1									
†Friends' Academy, New Bedford	1	.	.	2	2	1	1	2	.	1
*Gardner High School	.	1	.	.	.	.	.	1		
Georgetown College, D. C.	.	.	.	.	.	2	.	1		
Gibbens and Beach, Private School, New York	1	2	1							
*Gloucester High School	.	2	1	2	2	1	1	1	.	3
Goff, C. B., Engl. & Class. Sch., Providence, R. I.	.	.	.	.	.	.	.	1		
Griswold College, Davenport, Iowa	1									
Groton School, Groton	.	.	.	.	.	1	3	.	11	1
Grove City College, Pa.	.	.	.	.	.	.	.	.	1	
Gunnery School, Washington, Conn.	.	1	.	3	.	.	.	.	1	
Hale. Albert, Private School, Boston	.	.	.	.	.	.	.	.	3	5
Hamilton College, Clinton, N. Y.	.	.	.	1	.	1	.	1		
Hamline University, St. Paul, Minn.	.	.	.	.	.	.	.	.	1	1
Hanover College, Ind.	.	.	.	1						
†Harrow, England	.	.	.	.	.	1				
†Harry Hillman Academy, Wilkes-Barre, Pa.	.	1	.	2	.	1				
*Hartford, Conn., High School	.	1	1	.	.	.	.	1		
Harvard Graduate Student	.	.	.	1	.	.	.	1		
Harvard College Special Student	1	5	8	9	6	14	17	25	15	17
Harvard Divinity School	.	.	.	1	.	.	.	1	1	2
Harvard Medical School, Boston	.	.	.	.	1					
Harvard School, Chicago, Ill.	.	1	.	1	.	3	4	4	3	1
Harvard Veterinary School, Boston	.	.	.	.	.	.	.	.	1	
Haverford College, Pa.	2	1	1	2	1	1	1	2	1	1
*Haverhill High School	2	2	.	1	4	.	.	1	1	2
Hill School, Pottstown, Pa.	.	.	.	.	.	.	.	.	1	
*Hingham High School	.	.	.	1	.	2				
Hobart College, Geneva, N. Y.	.	.	.	2	.	.	1	2		
Holbrook's Military School, Sing Sing, N. Y.	.	.	.	.	.	.	.	1		
Hopkinson, John P., Private School, Boston	4	14	14	18	10	19	23	19	9	15
Howard College, Marion, Ala.	.	.	.	.	.	.	.	.	2	
Howard University, Washington, D. C.	.	.	.	.	.	.	.	1		
*Hyde Park High School	.	1	1	.	.	.	2			
*Hyde Park, Ill., High School	1	.	.	.	1					
Illinois State Normal University, Normal, Ill.	.	1	1	2	.	.	.	.	1	
Indianapolis, Ind., Classical School	1	1	1	.	1	1				
*Indianapolis, Ind., High School	.	.	.	.	1	1				
*Indiana State Normal School, Indiana, Pa.	.	.	.	.	.	.	.	.	.	1
Indiana University, Bloomington, Ind.	.	2								
Iowa College, Grinnell, Iowa	.	.	.	.	.	.	.	.	.	2
†Ives Seminary, Antwerp, N. Y.	.	.	.	.	.	.	1			
Jarvis Hall, Denver, Colo.	.	.	.	.	1					
Johns Hopkins University, Baltimore, Md.	.	1	.	1	.	.	.	.	1	
*Kansas City, Mo., High School	.	.	.	.	.	.	.	.	.	1
Kendall, Joshua, Private School, Cambridge	2	1	2	2	2	1	1	.	.	2
Kentucky Wesleyan College, Millersburg, Ky.	.	.	1							
Kenyon College, Gambier, O.	.	.	.	.	.	.	1	.	.	1
Keystone Academy, Factoryville, Pa.	.	.	.	.	1					
King's School, Stamford, Conn.	.	.	.	.	.	.	1	1		

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Knox College, Galesburg, Ill.	.	.	1	.	.	.	.	.	.	1
Lafayette College, Easton, Pa.	.	.	.	.	1					
*Lancaster High School	.	.	.	.	.	.	.	1		
†Lawrence Academy, Groton	1									
*Lawrence High School	.	1	.	.	1	1	1			
Lawrence Scientific School, Cambridge	1	.	.	.	.	.	1	2	4	3
Lawrence University, Appleton, Wis.	.	1	.	.	.	1				
†Lawrenceville School, N. J.	.	.	.	.	.	.	3	1		
*Leominster, Field High School	.	1	.	.	.	.	.	2		
LeRoy, N. Y., Academy	.	1								
*Lexington High School	.	.	.	.	.	.	.	1		
*Louisville, Ky., Male High School	.	.	.	.	.	.	1			
*Lowell High School	3	1	2	1	2	5	1	4	2	1
*Lynn High School	1	.	1	2	3	2	2	1	3	
†McCollom Institute, Mt. Vernon, N. H.	.	.	.	.	.	.	.	1		
Madison University, Hamilton, N. Y.	.	.	.	.	.	.	.	1	.	1
*Malden High School	1	3	.	.	.	.	.	.	1	2
Marietta College, Ohio	1	.	.	.	.	.	.	.	.	2
Mass. Institute of Technology, Boston	.	.	.	.	.	.	.	.	1	
Milwaukee, Wis., Academy	.	.	.	1	.	1	1	.	1	2
*Marlboro' High School	.	.	.	2	1	1	.	.	1	1
Marlborough St. School, Boston	.	.	.	.	.	.	1			
Marston's University School, Baltimore, Md.	.	.	.	.	.	.	1	.	.	1
Maupin's University School, Ellicott City, Md.	.	.	1							
*Medford High School	.	.	.	1	.	1	.	.	2	1
*Melrose High School	1	1	.	.	.	.	.	2	1	
*Merrimac High School	.	.	.	.	.	.	1			
*Methuen High School	.	.	.	.	.	.	.	.	.	1
*Michigan State Normal School, Ypsilanti	.	.	.	.	.	.	1			
Middlebury College, Vt.	.	.	.	.	.	.	.	.	1	
*Milford High School	.	1	2	.	2	2				
*Milwaukee, Wis., High School	1	.	.	.	2	.	1	.	2	
Monmouth College, Ill.	.	.	.	.	.	.	.	.	.	1
*Montclair, N. J., High School	.	.	.	1	.	.	.	.	.	1
*Montpelier, Vt., High School	1									
Morse, J. H., Private School, New York	.	.	2	.	.	2	1	2	1	
Mt. Allison College, Sackville, N. B.	.	.	.	.	1	1	.	.	.	1
Mt. Pleasant Military Academy, Sing Sing, N. Y.	.	.	1							
Nashville, Tenn., State Normal College	.	.	.	.	.	.	1			
*Natick High School	1	.	.	.	.	2				
*Needham High School	1	.	.	.	.	1				
*Newark, N. J., High School	.	.	.	.	.	.	.	.	1	
*Newburyport, Brown High and Putnam Schools	.	.	.	.	.	1	.	1	1	
†New Church School, Waltham	.	.	.	1	.	.	.	.	.	1
*Newport, R. I., Rogers High School	2	2	.	1	2	6	1	3	1	
*Newton High School	5	4	5	4	2	5	2	4	4	5
Newton, N. J., Collegiate Institute	.	.	.	1						
New York School of Languages	.	1	1		3					
†Nichols Academy, Dudley	.	.	1							
Nichols, Wm., Private School, Boston	.	1	4	2	10	1	5	.	2	5
Noble, G. W. C., Private School, Boston	6	10	9	13	10	12	8	12	9	8
*Northampton High School	1	1								
*North Attleboro' High School	.	.	.	.	.	.	.	1		
Northwestern University, Evanston, Ill.	.	.	.	.	.	.	.	1	.	3
Oberlin College, Ohio	.	.	.	1	.	2	1	1	.	1
Ohio Wesleyan University, Delaware, O.	.	.		.	1	1	6	.	.	1
*Omaha, Neb., High School	.	.	1	.	.	.	.	.	.	1
Park Institute, Rye, N. Y.	.	.	.	.	.	1				

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
*Pawtucket, R. I., High School	.	.	.	.	.	.	.	1		
Peekskill, N. Y., Military Academy	.	.	2							
Pennsylvania College, Gettysburg, Pa.	.	.	1	.	1					
*Philadelphia, Penn., High School	.	.	.	.	.	.	1			
†Phillips Academy, Andover	3	5	11	8	8	10	6	14	12	12
†Phillips Academy, Exeter, N. H.	19	23	25	25	29	16	19	22	20	28
Pierce Christian College, College City, Cal.	.	.	.	1						
Pine Hill Theological College, Halifax, N. S.	.	.	.	.	.	.	.	.	.	1
†Pinkerton Academy, Derry, N. H.	.	.	.	.	.	.	.	1	1	
*Pittsburg, Pa., Central High School	.	.	.	.	1	.	.	1	1	
*Portland, Me., High School	.	5	.	2	1	3	2	.	1	2
*Portsmouth, N. H., High School	.	.	.	.	.	.	.	.	.	1
Proctor Academy, Andover, N. H.	.	.	.	1						
Pro-Gymnasium, Germany	.	1								
*Providence, R. I., High School	1	.	1	.	.	.	.	1	.	1
Ripon College, Wis.	.	.	.	.	.	.	.	.	.	1
Riverview Academy, Poughkeepsie, N. Y.	.	.	.	1	1	.	.	2	2	
†Rochester, N. Y., Free Academy	.	.	.	.	.	.	.	1		
Rochester, N. Y., Theological Seminary	.	.	.	.	.	.	.	.	.	1
*Romeo, Mich., High School	.	.	.	.	.	.	.	.	1	
†Roxbury Latin School	14	11	7	12	15	12	19	12	10	12
Rugby Academy, Philadelphia, Pa.	.	.	.	1						
Sachs' Collegiate Institute, New York	.	.	1	4	1	3	1	2	8	2
†St. Johnsbury, Vt., Academy	.	1	.	.	.	1	1	.	.	1
St. John's College, Fordham, N. Y.	.	.	1							
St. John's School, Manlius, N. Y.	.	.	.	.	.	2				
†St. John's School, Presque Isle, Me.	.	.	.	.	.	.	1			
St. John's School, Sing Sing, N. Y.	1	.	.	.	2					
St. Lawrence University, Canton, N. Y.	.	.	.	.	.	.	.	1		
†St. Mark's School, Southboro'	3	5	4	1	1	6	4	3	3	5
*St. Paul, Minn., High School	.	.	.	.	.	.	2			
†St. Paul's School, Concord, N. H.	4	5	9	7	2	5	10	12	8	12
St. Stephen's College, Annandale, N. Y.	1									
*Salem High School	2	2	3	5	3	3	.	1	4	
*San Francisco, Cal., Boys' High School	2	.	2	2	1	1				
School of the Lackawanna, Scranton, Pa.	.	.	1							
Shortlidge's Media Academy, Pa.	1		2	2	.	3	2	.	1	
Skaneateles, N. Y., Union School	.		1							
Smith Academy, St. Louis, Mo.	.		.	.	1	1	1	1	2	
*Somerville High School	3	3	6	2	3	4	5	5	5	3
Southwestern Presb. Univ., Clarksville, Tenn.	.		.	.	1					
*Springfield High School	.		.	.	.	.	.	.	.	2
*Springfield, Ill., High School	.	.	.	.	.	.	.	1		
Spring Hill College, near Mobile, Ala.	.	.	.	1	.	1				
State College of Kentucky, Lexington, Ky.	.	1								
State University of Iowa, Iowa City	1	1	.	.	.	.	.	.	1	
Stewart Academy, Reading, Pa.	.	.	1							
Swarthmore College, Pa.	1	1	.	.	.	.	.	1	1	
*Syracuse, N. Y., High School	.	.	.	.	.	.	1			
Syracuse University, N. Y.	.	.	.	1	.	.	1			
Tabor Academy, Marion	.	.	.	1	.	.	.	.	1	
*Taunton High School	.	2	2	2	.	.	.	2		
†Thayer Academy, South Braintree	.	.	4	1	.	1				
Trinity College, Hartford, Conn.	.	2	.	1	.	.	.	.	1	
Trinity School, Tivoli, N. Y.	.	.	.	.	.	1				
*Troy, N. Y., High School	.	.	.	.	1	1				
Tufts College, College Hill	.	1	.	.	.	.	1	.	1	1
†Union Academy, Belleville, N. Y.	.	.	.	.	.	.	.	.	.	1

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Université de France		1								
University Grammar School, Providence, R. I.										1
University of Alabama, Ala.										1
University of California, Berkeley, Cal.		1						1		2
University of Chicago, Ill.				1						
University of Cincinnati, O.				1						
University of the City of New York			1							1
University of Des Moines, Iowa			1							
University of Georgia, Athens, Ga.								1		
University of Illinois, Champaign, Ill.					1					
University of Kansas, Lawrence, Kan.										3
University of Michigan, Ann Arbor, Mich.					3	2	1			
University of New Brunswick, Fredericton, N. B.										2
University of Oregon, Eugene City, Ore.								1		
University of Pennsylvania, Philadelphia, Pa.	1			1		1	1			
University of Rochester, N. Y.			1	2			1	1		
University of State of Missouri, Columbia, Mo.										1
University of Tennessee, Knoxville, Tenn.			1							
University of Vermont, Burlington, Vt.								1		
University of Virginia, Va.										
University of Wisconsin, Madison, Wis.				1						
University of Wooster, O.										2
University School, Chicago, Ill.				2	2			3		
University School, Petersburg, Va.					1					
University School, San Francisco, Cal.	2									
Urban School, San Francisco, Cal.		3		1			2			1
Utica, N. Y., Academy	1			1	1					
Vanderbilt University, Nashville, Tenn.										2
†Vermont Academy, Saxton's River, Vt.					1					
†Vermont Episcopal Institute, Burlington, Vt.		1		1	1					
*Wakefield High School										
*Waltham High School	1						1			1
Warsaw, N. Y., Union School			2			1				
Washburn College, Topeka, Kan.										1
*Washington, D. C., High School										2
*Washington Co., Vt., Grammar Sch., Montpelier						1				
Washington University, St. Louis, Mo.	1					1	1			
*Watertown High School										1
*Wellesley High School										1
Wesleyan University, Middletown, Conn.	3			1						2
†Western Reserve Academy, Hudson, O.								1		
*Westfield High School		1								
West Newton English and Classical School							2			
White & Sykes, Franklin School, Cincinnati, O.		1		4		3	2	3	2	
William Jewell College, Liberty, Mo.				1						
†William Penn Charter School, Philadelphia, Pa.										
Williams College, Williamstown					1					
†Williston Seminary, East Hampton	3					4				
Wilson and Kellogg, Private School, New York	1	1	3	1	2			2		
*Winchester High School										
*Winsted, Conn., High School										
*Woburn High School		1					2			
*Woonsocket, R. I., High School	1									
†Worcester Academy	1				2	1			1	2
*Worcester High School	1	3	1	1	2	2	2	1	3	4
†Worcester Polytechnic Institute								1		1
Yale College, New Haven, Conn.	2				1		1			2
Private Pupils	48	53	36	37	30	36	33	31	33	54

1856	4	16	44	34	29	7	1	4		3		2								17 yrs. $7\frac{3}{16}$ mos.	144
1857		6	31	27	25	8	3	3		5										17 ,, $11\frac{1}{12}$,,	108
1858		7	23	43	30	11	3	2	2	3										17 ,, $11\frac{3}{7}$,,	124
1859		6	26	56	31	14	5	3	1	1	1									17 ,, 11 ,,	144
1860		9	26	38	33	14	9	1	4	2										18 ,, $1\frac{1}{2}$,,	136
1861		3	24	50	23	13	3	5	1	2			1		1					18 ,, $1\frac{1}{4}$,,	126
1862		2	19	41	30	15	10	3	2				1							18 ,, $3\frac{7}{16}$,,	123
1863	1	2	22	38	36	13	5	7		2			1		1					18 ,, $4\frac{2}{5}$,,	128
1864	1		14	30	18	19	6	3	1	2	1				1	1				18 ,, $9\frac{1}{8}$,,	97
1865		5	19	51	28	23	9	1	5		1		1							18 ,, $3\frac{7}{12}$,,	143
1866		6	19	38	46	23	8		3	1										18 ,, $2\frac{5}{12}$,,	144
1867			22	56	55	24	7	9	3	1	1									18 ,, $5\frac{1}{5}$,,	178
1868			16	48	37	22	13	2	1	2										18 ,, $5\frac{1}{3}$,,	141
1869		2	15	49	52	22	11	6						1	1					18 ,, $5\frac{3}{8}$,,	159
1870		3	19	76	53	29	11	4	4	1	1			1						18 ,, $4\frac{4}{5}$,,	208
1871		6	24	59	62	28	16	4	1	1										18 ,, $3\frac{1}{2}$,,	201
1872		2	20	51	65	29	12	4	2	1				1						18 ,, $5\frac{7}{10}$,,	188
1873	1	2	19	52	76	43	17	11	3	4	2	5		1						18 ,, $10\frac{2}{3}$,,	236
1874	1	2	19	61	58	42	7	4	1	2	2	2		1						18 ,, $6\frac{5}{6}$,,	202
1875	1	1	12	78	93	49	10	7	3	4										18 ,, $6\frac{5}{8}$,,	258
1876		1	12	58	60	53	20	7	2	2	1		1							18 ,, 9 ,,	217
1877		2	16	52	80	53	23	9	6	3	1									18 ,, $9\frac{3}{5}$,,	245
1878		2	14	52	78	45	22	7	9		1									18 ,, $9\frac{1}{3}$,,	230
1879		1	16	49	86	53	19	15	4	1	1	1	1	1						18 ,, 11 ,,	248
1880		1	12	52	84	53	24	9	3	4	1	2	1	1						18 ,, $11\frac{2}{3}$,,	247
1881		3	10	38	73	55	31	10	8	1	1									19 ,,	230
1882	1	3	11	58	*89	60	28	12	4	5	1	2						1		19 ,,	275
1883			17	65	100	61	23	7	7	2	2	1								18 ,, $9\frac{1}{2}$,,	285
1884	1		12	63	90	72	29	8	4	1	5	1							(45)	18 ,, $10\frac{2}{5}$,,	286
1885	2		10	63	89	56	40	6	4	4	1	2				1	1	1	1	19 ,, $1\frac{4}{7}$,,	281
1886		4	14	64	116	67	29	12	3	3	2	1	2	2			2		(44)	18 ,, $11\frac{5}{8}$,,	321
1887			8	70	109	87	26	8	12	2	2	3	4	1			1		1	19 ,, $2\frac{3}{14}$,,	334
1888			13	58	115	65	32	15	5	3	4	1	1	1			1			19 ,, $\frac{4}{15}$,,	314
1889		1	13	65	112	83	23	8	3	4	4	1		2	1	1				19 ,, $\frac{6}{13}$,,	321
1890			11	59	119	85	27	15	1	3	3	1			1					19 ,, $\frac{1}{10}$,,	325

* On the assumption that all who ever joined each class were admitted as Freshmen.

1890-91.

PHILOSOPHY.

Primarily for Undergraduates.

INTRODUCTORY COURSES.

EVENING LECTURES. — Twelve public lectures on the History and Problems of Philosophy will be given by Professor ROYCE on Wednesday evenings during the first half-year.

1. General Introduction to Philosophy. — Logic, by Professor PALMER; Psychology, by Dr. SANTAYANA; and Metaphysics, by Professor JAMES. — Jevons' Lessons in Elementary Logic. — Murray's Handbook of Psychology. — Lotze's Outlines of Metaphysics. *Mon.*, *Wed.*, *Fri.*, *at 2.* (V.)

For Graduates and Undergraduates.

SYSTEMATIC COURSES.

2. Psychology. — James' Principles of Psychology. — Recitations, theses, lectures, and illustrative experiments. *Mon.*, *Wed.*, *Fri.*, *at 12.* Professor JAMES. (IV.)

3. Cosmology. — Discussion of the Principal Problems of the Philosophy of Nature, with special reference to the modern doctrine of Evolution. — Lectures and theses. *Mon.*, *Wed.*, *Fri.*, *at 2.* Asst. Professor ROYCE. (V.)

1889-90.

Philosophy.

INTRODUCTORY COURSES.

1. Greek Philosophy. — Zeller's Outlines of the History of Greek Philosophy. — Lectures and essays. *Tu.*, *Th.*, *Sat.*, *at 12.* Professor PALMER. (X.)

2. Logic and Psychology. — Jevons's Elementary Lessons in Logic. — Ladd's Physiological Psychology. *Mon.*, *Wed.*, *Fri.*, *at 12.* Professor JAMES. (IV.)

3. Psychology and General Introduction to Philosophical Study. — *First half-year:* Ladd's Physiological Psychology. — *Second half-year:* Psychology concluded. — Elementary study of the fundamental problems of Philosophy. — Lectures on Logic. *Mon.*, *Wed.*, *Fri.*, *at 3,* Asst. Professor ROYCE. (VI.)

Courses 1, 2, and 3 are recommended as a preparation for students intending to take any of the advanced courses in a subsequent year. Only one of the three can be counted for Honors.

Courses 2 and 3 are parallel courses and cannot both be counted by the same student. A student may take Courses 1 and 2 or 1 and 3; but in that case one of the two will count for him only as a half-course.

4. Ethics. — The Theory of Morals. — Lectures, theses, and private reading. *Mon.*, *Wed.*, *Fri.*, *at 3.* Professor Palmer. (VI.)

5. The Philosophy of Religion; its method and principles. — Lectures and an essay. *Half-course.* *Wed.*, *at 10.* Professor F. G. Peabody. (II.)

*6. The Psychological Basis of Religious Faith. *Half-course.* *Tu.*, *at 9.* Professor Everett. (VII.)

Course 6 can be counted for the degree only by students who also take Course 8.

Historical Courses.†

*8. Studies in the Comparative History of Religions, particularly the Vedic religion, the Hindu philosophies, Buddhism, Mazdaism, and the Chinese religions. *Half-course.* *Th.*, *Sat.*, *at 9.* Professor Everett. (VII.)

[9. Greek Philosophy. — Zeller's Outlines of Greek Philosophy. — Lectures and theses. *Tu.*, *Th.*, *Sat.*, *at 12.* Professor Palmer.] Omitted in 1890–91. (X.)

10. Descartes, Spinoza, and Leibnitz. — Lectures and theses. *Tu.*, *Th.*, *Sat.*, *at 12.* Professor James. (X.)

11. English Philosophy from Hobbes to Hume. — Lectures and theses. *Tu.*, *Th.*, *Sat.*, *at 11.* Dr. Santayana. (IX.)

12. The Movement of German Thought from 1770–1830. — Kant. — Fichte. — Schelling. — Hegel. — Lectures, theses, and private reading. *Mon.*, *Wed.*, *Fri.*, *at 11.* Asst. Professor Royce. (III.)

Advanced Courses.

The following courses are intended for those who have already taken an introductory course in Philosophy.

4. Systematic Ethics. — The Theory of Ethics, considered constructively. — Lectures, theses, and private reading. *Mon.*, *Wed.*, *Fri.*, *at 4.* Professor Palmer. (VI.)

5. English Philosophy. — Berkeley's Principles of Human Knowledge. — Hume's Treatise of Human Nature. — Reid's Essays on the Intellectual Powers of Man. — Theses and lectures. *Tu.*, *Th.*, *Sat.*, *at 12.* Dr. Santayana. (X.)

6. Earlier French Philosophy, from Descartes to Leibnitz, and German Philosophy from Kant to Hegel. — Lectures. *Mon.*, *Wed.*, *Fri.*, *at 11.* Dr. Santayana. (III.)

13. The Philosophy of Nature in its relations to Theology and Ethics. — Spinoza's Ethics. — Lectures on the history of the doctrine of Evolution. — Spencer's First Principles. — Leconte's Evolution in its Relation to Religious Thought. — Theses. *Mon.*, *Wed.*, *Fri.*, *at 12.* Asst. Professor Royce. (IV.)

11. The Ethics of Social Reform. — The questions of Charity, Divorce, the Indians, Labor, Prisons, Temperance, etc., as problems of practical Ethics. — Lectures, essays, and practical observations. *Tu.*, *Th.*, *at 10.* Professor F. G. Peabody. (VIII.)

---

† As the student in these courses may have a large amount of reading to do, the third hour weekly will be at the option of the instructor.

13. Contemporary Systems. — The Philosophy of Lotze. — Lotze's Mikrokosmus. *Mon., Wed., Fri., at 3.* Dr. Santayana. (VI.)
Not given in 1890–91.

14. The Ethics of the Social Questions. — The questions of Charity, Divorce, the Indians, Temperance, and the various aspects of the Labor Question (Socialism, Communism, Arbitration, Coöperation, etc.), as problems of practical Ethics. — Lectures, essays, and practical observations. *Tu., Th., (and voluntary conferences on Sat.,) at 10.* Professor F. G. Peabody. (VIII.)

Primarily for Graduates.

7. The Content of Christian Faith. — Lectures and essays. *Mon., Wed., Fri., at 11.* Professor Everett. (III.)

Courses of Research.

20*a*. Psychological Seminary. — Subject for the year: Pleasure and Pain. — Laboratory work. *Th., 7–9* p.m. Professor James.

20*b*. Metaphysical Seminary. — Subject for the year: The Development of the Hegelian System. — Lectures, papers, and original research. *Tu., 7.30–9.30* p.m. Asst. Professor Royce.

20*c*. Ethical Seminary. — Subject for the year: Modern Pessimism. *Sat., 10–12.* Professor Palmer.

20*d*. Questions in Ethics for individual investigation. Professor Palmer.

Philosophical Conference.

Generally on the second and fourth Mondays of each month Graduate Students will meet at the house of an officer of the department, for friendly intercourse and informal discussion of philosophical subjects.

*10. The Philosophy of Religion; its history from Lessing to Schleiermacher; its methods and principles. — Lectures and essays. *Half-course. Wed., at 10.* Professor F. G. Peabody. (II.)

Courses for Special Research.

The following courses are intended for Specialists. Undergraduates will not regularly be admitted to them.

20*a*. Questions in Psychology (with laboratory work). *Mon., 7 to 9* p.m. Professor James.

20*b*. The Development of the Hegelian System. — Hegel's Phänomonologie des Geistes. — Lectures and original research. *Tu., 7.30 to 9.30* p.m., *and (at the pleasure of the Instructor) Th., 3 to 5.* Asst. Professor Royce.

20*c*. Questions in Ethics. Professor Palmer.

Attention is also called to Course 8 in Greek (Plato and Aristotle).

HISTORY.

For Undergraduates.

1. Mediaeval and Modern European History (introductory course). *Tu., Th., Sat., at 10.* Asst. Professor Channing. (VIII.)

For Juniors and Seniors Course 1 will be counted only as a half-course. Students who presented American and English history for admission to College, must attain Grade C in this course in order to have it counted for the degree.

2. Constitutional Government (elementary course). *Half-course. Tu., Th., Sat., at 9 (first half-year).* Professor Macvane. (VII.)

Course 2 is recommended for students who expect to take Course 11, 12, or 13. It is not open to students who have taken either of those courses, nor will it be counted towards the degree for Seniors.

[4. Roman History to the reign of Diocletian. *Mon., Wed., Fri., at 10.* Mr. Bendelari.] (II.)

Omitted in 1890–91.

In order to be admitted to any of the following courses, students must have passed satisfactorily in one of the introductory courses, or must otherwise satisfy the Instructor of their fitness to proceed.

5. History of Western Europe from the Germanic Invasions to the Tenth Century, with especial reference to Institutions. *Mon., Wed., Fri., at 10.* Mr. Bendelari. (II.)

8. History of France to the reign of Louis XIV., with especial reference to Institutions. *Tu., Th., at 3, and a third hour at the pleasure of the Instructor.* Dr. Snow. (XII.)

9. Constitutional History of England to the Sixteenth Century. *Mon., Wed., Fri., at 11.* Dr. Gross. (III.)

10. American History (to 1783). *Tu., Th., Sat., at 9.* Asst. Professor Channing. (VII.)

History.

1. Mediaeval and Modern European History (introductory to Courses 5, 6, 8, 9, 10, 11, and 12). *Tu., Th., Sat., at 10.* Asst. Professor Channing. (VIII.)

For Juniors and Seniors Course 1 will be counted only as a half-course. A student who presented American and English history in his examination for admission to College, must attain Grade C in Course 1 in order to have it count towards his degree.

2. Constitutional Government (elementary course, introductory to Courses 11, 12, 13, and 17). *Half-course. Tu., Th., Sat., at 9 (first half-year).* Professor Macvane. (VII.)

Course 2 can be taken by Seniors only as an *extra*.

Courses 1 and 2 are designed particularly for Sophomores and Freshmen, and are not counted for Honors. They cannot be taken after those courses to which they are intended to be introductory.

3. History of the Development of Political and Legal Institutions in Rome to the Fall of the Republic. *Wed., Fri., and (at the pleasure of the Instructor) Mon., at 10.* Mr. Bendelari. (II.)

[4. Later Roman and Early Mediaeval History. — Development of the Frankish Constitution to the death of Charlemagne. *Wed., Fri., and (at the pleasure of the Instructor) Mon., at 10.* Mr. Bendelari.] (II.)

Omitted in 1889–90.

Students who intend to take Course 8 will find Course 4 a useful introduction to it.

11. European History during the Seventeenth Century and the first half of the Eighteenth. *Mon.*, *Wed.*, *Fri.*, *at 12.* Mr. BENDELARI. (IV.)

12. European History from the Middle of the Eighteenth Century. *Tu.*, *Th.*, *Sat.*, *at 11.* Professor MACVANE and Asst. Professor CHANNING. (IX.)

13. Constitutional and Political History of the United States (1783–1861). *Tu.*, *Th.*, *Sat.*, *at 12.* Asst. Professor HART. (X.)

14. General History of the United States. *Half-course.* *Tu.*, *Th.*, *Sat.*, *at 9* *second half-year*). Asst. Professor HART. (VII^2.)

Course 14 is intended for those who desire a briefer and more general course than 13. Course 2 is required as an ntroduction to it. Course 14 is not counted for Honors, nor can both 14 and 13 be counted towards the degree. Students who presented American and English history in the examination for admission, must attain Grade C in Course 14 in order to have it counted towards the degree.

*15. Elements of Public International Law. — History of Treaties. *Tu.*, *Th.*, *Sat.*, *at 11.* Dr. SNOW. (IX.)

Students intending to take this Course are advised to take Courses 12 and 13 by way of preparation for it.

Primarily for Graduates.

The subjects numbered 21–29 in the following list are also treated in the courses offered to Undergraduates. Members of the Graduate School electing any of these subjects have the privilege of attending the lectures of the corresponding College course. The separate exercises of the Graduate School in these cases are intended for conference and for more advanced treatment of the subject.

21. **Early Mediaeval Institutions.** *Mon.*, *4.30–6.* Mr. BENDELARI.

22. **The Sources and Literature of English Constitutional History.** *Mon.*, *at 2.* Dr. GROSS.

[5. The Conflict of Christianity with Paganism. — Origin and development of the Roman Primacy to its alliance with the Holy Roman Empire, A.D. 800. *Tu.*, *Th.*, *at 9.* Professor EMERTON.] (VII.)

Omitted in 1889–90.

[6. The Mediaeval Church, with especial reference to its effect upon public life and upon intellectual and social progress. *Tu.*, *Th.*, *at 3.* Professor EMERTON.] (XII.)

Omitted in 1889–90.

8. History of Government and Administration in France from the Frankish period to modern times. *Tu.*, *Th.*, *and* (*at the pleasure of the Instructor*) *Sat.*, *at 10.* Dr. SNOW. (VIII.)

Course 4 will be found a desirable introduction to Course 8.

9. Constitutional and Legal History of England to the Sixteenth Century. *Mon.*, *Wed.*, *Fri.*, *at 11.* Dr. GROSS. (III.)

10. The Era of the Reformation in Europe, from the rise of Italian Humanism to the close of the Council of Trent. *Wed.*, *Fri.*, *at 9.* Dr. A. V. G. ALLEN. (I.)

11. European History during the Seventeenth Century and the first half of the Eighteenth. *Mon.*, *Wed.*, *Fri.*, *at 12.* Mr. BENDELARI. (IV.)

12. European History from the Middle of the Eighteenth Century. *Tu.*, *Th.*, *Sat.*, *at 11.* Professor MACVANE and Asst. Professor CHANNING. (IX.)

18. American History (to 1783). *Tu.*, *Th.*, *Sat.*, *at 9.* Asst. Professor CHANNING. (VII.)

23. History of the government and institutions of France to the reign of Louis XIV. Dr. SNOW.

Not given in 1890–91.

24. General Church History. *Mon., Wed., Fri., at 11.* Professor EMERTON.

25. English Constitutional History from the Tudor period to the accession of George I. Mr. BENDELARI.

Not given in 1890–91.

26. History of American Institutions to 1783. *Mon., at 12.* Asst. Professor CHANNING.

27. Constitutional Development of the United States. Discussion of Constitutional principles in connection with historical questions. *Fri., at 4.* Asst. Professor HART.

28. History of Continental Europe (chiefly of France and Germany) since the Seven Years' War. *Tu., Th., Sat., at 11, Wed., at 12 (first half-year).* Professor MACVANE and Asst. Professor CHANNING.

29. Constitutional History of England since the accession of George I. *Tu., Th., Sat., at 11, Wed. at 12 (second half-year).* Professor MACVANE and Asst. Professor CHANNING.

30. Federal Government: historical and comparative. *Tu., Th., Sat., at 9 (first half-year).* Asst. Professor HART. (VII^1.)

31. Leading principles of Constitutional Law: selected cases, American and English. *Tu., Th., Sat., at 9 (second half-year).* Professor MACVANE. (VII^2.)

32. The historical development of International Law. *Wed., Sat., at 12.* Dr. SNOW.

13. Constitutional and Political History of the United States (1783–1861). *Tu., Th., Sat., at 12.* Asst. Professor HART. (X.)

17. General History of the United States. *Half-course. Tu., Th., Sat., at 9 (second half-year).* Asst. Professor HART. (VII.)

Course 17 is intended for those who desire a briefer and more general course than 13. Course 2 is required as an introduction to it. No student can take both 17 and 13. Course 17 is not counted for Honors. A student who presented American and English history in his examination for admission, must attain Grade C in Course 17 in order to have it count towards his degree.

*14. Constitutional Government (Advanced Course). *Mon., Wed., Fri., at 9.* Professor MACVANE and Asst. Professor HART. (I.)

Course 14 is open to students who have passed creditably in Course 12 and at least one of the courses numbered 8, 9, 11, and 13.

*15. Elements of Public International law. — History of Treaties. *Tu., Th., Sat., at 11.* Dr. SNOW. (IX.)

Students intending to take this Course are advised to take Courses 12 and 13 by way of preparation for it.

*16. Studies in the Comparative History of Religions (particularly the Vedic Religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese Religions). *Half-course. Th., Sat., at 9.* Professor EVERETT. (VII.)

*20. Special Advanced Study and Research. — In addition to the foregoing courses opportunities will be afforded to com-

GEOLOGY.

Primarily for Undergraduates.

1. Meteorology. — Lectures, recitations, written exercises, and laboratory work. *Half-course. Mon., Wed., Fri., at 9* (*first half-year*). Professor Davis. (I^1.)

2. Physical Geography. — Lectures, recitations, written exercises, and laboratory work. *Half-course. Mon., Wed., Fri., at 9* (*second half-year*). Professor Davis. (I^2.)

Courses 1 and 2 together constitute a general course in elementary physical geography and meteorology.

4. Elementary Geology. — Lectures. — Dana's Manual of Geology. *Half-course. Wed., Fri., and* (*at the pleasure of the Instructor*) *Mon., at 12.* Professor Shaler. (IV.)

Course 4, if taken by a Senior, will not be counted towards the degree.

4*a*. Elementary Geology. — Laboratory and field exercises, with occasional lectures. *Half-course. Lectures:* I. *Mon., Wed., 10–12.* II. *Mon., Wed., 2–4.* III. *Tu., Th., 9–11.* IV. *Tu., Th., 11–1.* V. *Tu., Th., 2–4.* VI. *Fri., 2–4.* Dr. Harris. (IV.)

Course 4*a* is open to those only who take or have taken Course 4. It is designed especially for students who intend to take Course 8 in a subsequent year, and as the number of students in the course is necessarily limited, preference will be given to those who intend to take Course 8.

Courses 1, 2, 4, and 4*a* are intended for beginners and for those who wish to get a comprehensive view of these subjects. They are open to Freshmen.

Geology.

1. Physical Geography and Meteorology (elementary course). — Lectures and laboratory work. *Mon., Wed., Fri., at 9.* Asst. Professor Davis. (I.)

*20. Physical Geography and Meteorology (second course). — Lectures and reports. *Twice a week.* Asst. Professor Davis.

Course 20 is intended for students who have taken Course 1. The work of the course will include special investigation of selected topics by the students.

4. Geology. — Lectures. — Dana's Manual of Geology. *Half-course. Wed., Fri., and* (*at the pleasure of the Instructor*) *Mon., at 12.* Professor Shaler. (IV.)

Course 4 can be taken by Seniors only as an *extra*.

4*a*. Geology. — Laboratory and field exercises. *Half-course.* Mr. Harris.

Course 4*a* is open to those only who take or have taken Course 4. It is designed especially for students who intend to take Course 8 in a subsequent year, and as the number of students in the course is necessarily limited, preference will be given to those who intend to take Course 8.

Courses 1, 4, and 4*a* are intended for beginners and for those who wish to get a comprehensive view of these subjects. They are open to Freshmen.

*8. Second Course in Geology (with field work). *Mon., Wed., Fri., at 10.* Professor Shaler, Asst. Professor Davis, and Dr. Wolff. (II.)

Course 8 is adapted for students who have already taken Courses 4 and 4*a*.

For Graduates and Undergraduates.

*8. General Critical Geology.—Lectures, field work, and theses. *Mon., Wed., Fri., at 10.* Professors Shaler and Davis, and Dr. Wolff. (II.)

Course 8 is adapted for students who have already taken Course 4 and either 4*a* or the elementary course in the Summer School of Geology. Students taking this course should keep Thursday or Friday afternoon or Saturday morning free for field work.

*9. Structural and Dynamical Geology of the stratified rocks. — Lectures, reading, and theses. *Wed., at 4. Half-course.* Dr. Harris.

Open to those only who have taken Course 8 or the advanced course in the Summer School.

*14. Palaeontology. — Lectures, laboratory work, and theses. *Wed., Fri., and (at the pleasure of the Instructor) Mon., at 9, and laboratory work.* Professor Shaler. (I.)

Course 14 is open to those only who have taken Geology 4, Botany 1, and Zoölogy 1.

*22. Petrography. — Lectures, laboratory work, and theses. *Tu., Th., at 11.* Dr. Wolff.

Open to those only who have taken Course 4 and Chemistry 2. The second half of Chemistry 7 is also recommended in preparation for this course.

[*18. Economical Geology. *Mon., Tu., Wed., Th., at 11 (second half-year).* Professor Whitney.] (III^2.)

Omitted in 1890–91.

Primarily for Graduates.

15. Historical Geology (with laboratory work). *Twice a week.* Professor Shaler.

25. Mineral Veins and Metalliferous Deposits: their mode of occurrence, and theories of their origin. *Half-course. Wed., Fri., at 11 (first half-year).* Professor Whitney. (III^1.)

*15. Historical Geology (with laboratory work). *Twice a week.* Professor Shaler.

*16. Geological field work; for training in the principles of Geological Surveying, with work in the field and in the preparation of reports. Professor Shaler, Asst. Professor Davis, Dr. Wolff, and Mr. Harris.

*18. Economical Geology. *Mon., Tu., Wed., Th., at 11 (second half-year).* Professor Whitney.

22. Petrography. Lectures and theses. — Laboratory work. *Mon., Tu., Wed., Th., at 11 (first half-year).* Dr. Wolff. (IX.)

Course 22 is open to those only who have taken Course 4 and Chemistry 2.

[*25. Mineral Veins and Metalliferous Deposits: their mode of occurrence, and theories of their origin. *Half-course. Mon. at 11.* Professor Whitney. (III.)

Omitted in 1889–90.

Professors Shaler and Davis and Dr. Wolff will oversee and direct the work, in the field or library, of advanced special students in Geology.

COURSES OF RESEARCH.

20*a*. Physical Geography and Meteorology (second course). — Lectures and reports. *Th., at 9, and a second hour at the pleasure of the Instructor.* Professor DAVIS.

This course is adapted for students who have already had some instruction in Physical Geography and Meteorology. The work of the course will include special investigation of selected topics by the students.

20*b*. Advanced geological field work; for training in the principles of Geological Surveying, with original investigation in the field and practice in the preparation of reports. Professors SHALER and DAVIS, Drs. WOLFF and HARRIS.

Open to those only who have passed satisfactorily in Course 8 and in Chemistry *C* (first half) or Chemistry 2; and who have also attended the advanced course in the Summer School of Geology. Students in this course attend the meetings of the Geological Conference on Tuesday evenings.

20*c*. Palaeontology (second course). Professor SHALER.

Open to those who have already studied Palaeontology and Zoölogy.

20*d*. Petrography (second course). Individual research in the field and laboratory. Dr. WOLFF.

GEOLOGICAL CONFERENCE.

The instructors in this department meet the more advanced students in the various courses on Tuesday evenings from November to April for the presentation of theses and reports on subjects investigated by the members, with informal comment and discussion by those present. At each meeting there will be one leading paper on a subject announced at a previous meeting; discussion will be directed chiefly to the subject thus presented. There will also be brief statements on work in progress, and comments on new publications and other matters of interest.

office), and that of Superintendent of Schools in cities of not less than 50,000 inhabitants, was indicated. 13. Membership in the Massachusetts Medical Society was not recorded, and membership in the National Academy of Sciences was inserted. Besides this society, and the American Academy of Arts and Sciences, the American Philosophical Society, and the Massachusetts Historical Society, membership in which was noted according to custom, membership other than resident in a number of leading American societies, and membership in certain leading foreign societies was recorded. The societies to be recognized were selected by a committee of the Academic Council. This closes the list of changes made by recommendation of the Academic Council.

A few other changes suggested by myself in a letter of June 8th, 1889, were approved by the Corporation and carried into effect. 1. An index to the lists of officers was inserted just before the index to graduates. 2. A list of Deans of the College and of the Schools was inserted. 3. In recording the Professors, the name of the chair held was placed after the name of the person, and brief historical notes concerning the foundation of professorships were inserted. 4. Elected Overseers who were alumni have the title of their office placed after their names in the alumni list. 5. Instructors appointed without limit of time, or for a longer term than one year, have their office indicated in the alumni list. 6. When graduates of this University have received honorary degrees from the University their names are inserted in the list of those who have received honorary degrees, but the full record appears only in the alumni list, under the year of graduation.

Subsequently, upon later suggestions, a list of Acting Presidents, and a list of Assistants, was inserted.

Advantage was taken of the translation to do away with antiquities; to give greater clearness to the designation of other colleges, etc.; to revise the arrangement and punctuation, and to facilitate reference as much as possible.

The historical matter introduced into the last issue was rewritten and increased; the origin of the College was indicated by extracts from the Records of the Colony of Massachusetts Bay, and the bequest of Harvard was explained by fac-similes from College records and from "New England's First Fruits."

When graduates of the College had graduated from the Divinity School before the degree of Bachelor of Divinity was required, the fact had never before been noted in the alumni list, and as it was not referred to in the Index there was no way of finding whether a Bachelor of Arts had graduated from the Divinity School, except by reading the Divinity list. In this issue the fact of graduation and the year is indicated in the alumni list.

In the school lists, the insertion of M.D., LL.B., etc., after each name has been abandoned as useless.

The section "Doctor of Philosophy, etc." has been entirely rearranged, so that it is now possible to tell at once what degree each man has received.

The great amount of new matter made it necessary to use a smaller type, whereby the increase in bulk of the book is no more than usual. Many experiments were made, and the size and cut chosen was thought to satisfy all requirement better than any other. Many small typographical changes have been made throughout the work.

WM. H. TILLINGHAST, *Editor*.

NUMBER OF ORDINARY DEGREES IN 1890.

Bachelors of Arts of the Class of 1890	282
Bachelors of Arts out of course	10
Bachelors of Science	7
Bachelor of Divinity	1
Bachelors of Divinity and Masters of Arts	3
Bachelors of Laws	30
Bachelors of Laws and Masters of Arts	18
Bachelors of Laws out of course	4
Doctors of Medicine	65
Doctors of Medicine and Masters of Arts	3
Doctors of Dental Medicine	15
Doctor of Dental Medicine out of course	1
Doctors of Veterinary Medicine	6
Masters of Arts	30
Doctors of Philosophy and Masters of Arts	8
Total	473

INDEX.

PAGE

Administrative Boards . . . 4, 5, 39, 213
Age of Freshmen at admission . . . 7, 9, 227
Appointments . . . 3, 4, 26, 212–217
Architecture, professorship of needed . . . 20, 112
Arnold Arboretum, report on . . . 30, 170–172
Arts and Sciences, Faculty of . . . 4
“ “ “ report of Dean of . . . 38–40
“ “ “ instruction offered by . . . 10, 12, 100–103, 228–237
“ “ “ departments under . . . 10, 11
Athletic Sports, Buildings and Grounds . . . 16–18, 238
Botanic Garden, report on . . . 29, 166–170
Botanical Museum . . . 29, 169
Bussey Institution, report on . . . 26, 149
Chemical Laboratory, report on . . . 30, 172–180
“ “ equipment . . . 175–176
“ “ original work in . . . 176–180
College, report on . . . 5, 40–111
“ number of students in . . . 40–45
“ statistics of admission to . . . 9, 10, 46–57
“ discipline in . . . 57–58
“ instruction in . . . 58–103
“ degrees with distinction and honors . . . 13–15
“ proposed abridgment of course for degree of A.B. . . . 13, 103–107
“ graduation in three years . . . 108, 109
Degrees . . . 240
Dental School, report on . . . 25, 26, 147, 148
Divinity School, report on . . . 22, 119–126
“ “ gain in number of students . . . 22, 119
Dormitory needed . . . 19
Foxcroft Club . . . 18
Gifts . . . 17, 29, 33, 36, 165, 167, 174, 185, 186, 208, 210, 238
Graduate School, report on . . . 5, 21, 112–118
“ “ number of students . . . 21, 113
“ “ fellowships and scholarships in . . . 22, 114–117
Herbarium, report on . . . 29, 165–166
Jefferson Physical Laboratory, report on . . . 31, 181–185
“ “ “ instruction and number of students 181–183
“ “ “ original work . . . 183–184
“ “ “ equipment and financial condition 184, 185
Law School, report on . . . 23, 126–136
“ “ statistics of the School . . . 23, 24, 128–131
“ “ changes in twenty years . . . 131–136

LAWRENCE SCIENTIFIC SCHOOL, report on 5, 19–21, 111–112
" " " number of students 19, 111, 112
" " " new professorships needed 20, 112
LIBRARY, report on 28, 124, 125, 151–164
" cost of serial publications 152, 153
" accessions 154–155
" department libraries 154
" use of 155–158
" imperative needs of 28, 29, 152, 164
Loan Furniture Fund 19
MEDICAL SCHOOL, report on 136–146
" " instruction in 138–142
" " Sears laboratories completed 25, 136
" " special research 137, 143–146
MINERALOGICAL MUSEUM 30, 174
MUSEUM OF COMPARATIVE ZOÖLOGY, report on 32, 195–201
" " " instruction at 195
" " " accessions 196
" " " publications 197, 198
" " " equipment and financial condition . 198–201
OBSERVATORY, report on 31, 32, 185–194
" a fireproof building needed for 31, 185
" employment of instruments 186–187
" Henry Draper Memorial 187, 189
" Boyden Fund 189–191
" Bruce photographic telescope 191
" publications 192–194
Overseers, change in method of election of 35
PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY . . . 32–33
" " report on 201–211
" " addition to the Museum 202
" " accessions 203, 204
" " instruction 206, 207
" " publications 209–210
" " expenditures 211
Preachers to the University 3
Preparatory Schools and Colleges 6, 7, 221–226
Publication Funds 11
Quinquennial Catalogue 35, 238, 239
Resignations 3, 212
Retiring Allowance Fund 36
Salaries, increase in 36
Semitic Museum 33, 34, 202
Special Students 15, 16, 24
Statutes of the University amended 4, 38, 107, 117, 218–220
Summer courses 34, 35, 176
University Museum 32
VETERINARY SCHOOL, report on 27, 149–151
" " financial condition of 28, 151

TREASURER'S STATEMENT.

SIGILLVM ACADEMIAE HARVARDIANAE IN NOV ANG

1890.

TREASURER'S STATEMENT.

TO THE BOARD OF OVERSEERS OF HARVARD COLLEGE: —

The Treasurer of the College submits the Annual Statement of the financial affairs of the University, for the year ending July 31, 1890, in the usual form.

The Funds separately invested, with the income thereof, are as follows: —

	Principal. July 31, 1890.	Income.
UNIVERSITY.		
John Cowdin Fund,		
Real Estate in Boston,	$22,000.00	$1,634.14
Walter Hastings Fund (part of),		
Real Estate in Cambridge,	20,000.00	600.24
John L. Russell Fund (part of),		
Real Estate in Salem, } sold during the		188.00
10 shares Hingham Nat'l Bank, } year,		17.50
COLLEGE.		
Stoughton Scholarship (part of),		
Real Estate in Dorchester,	1,294.30	
Pennoyer Scholarships (part of),		
Pennoyer Annuity in England,	4,444.44	245.52
Jonathan Phillips Gift,		
Mortgages,	10,000.00	500.00
Daniel H. Peirce Fund.		
Mortgage,	13,286.60	661.02
Samuel Ward's Gift,		
Ward's (Bumkin) Island, Boston Harbor,	1,200.00	50.00
Scholarships of the **Class of 1856**,		
$10,000 Frem., Elkhorn & Mo. Valley R. R. 6's,	10,000.00	600.00
Charles Haven Goodwin Scholarship,		
Personal Note,	6,000.00	300.00
LIBRARY.		
Charles Minot Fund (part of),		
$60,000 Buffalo, Bradford, & Pittsb. R. R. 7's,	60,000.00	4,200.00
Ichabod Tucker Fund (part of),		
Policy of Mass. Hospital Life Insurance Co.,	5,000.00	200.00
MUSEUM OF COMPARATIVE ZOÖLOGY.		
Agassiz Memorial Fund (part of),		
Advances for new building, &c.,	21,784.13	995.45
Amounts carried forward,	$175,009.47	$10,191.87

Amounts brought forward,	$175,009.47	$10,191.87

OBSERVATORY.

Uriah A. Boyden Fund (part of),		
35 shares East Boston Ferry Co.,	1.00	

SPECIAL FUNDS.

Bussey Trust,		
Real Estate,	413,092.80	24,046.12
Robert Troup Paine Fund (accumulating),		
$31,500 Massachusetts 5's,	35,972.50	1,532.78
Fund of the Class of 1834,		
Policy of Mass. Hospital Life Insurance Co.,	1,000.00	40.00
Fund of the Class of 1853,		
Policies of Mass. Hospital Life Insurance Co.,	3,625.00	105.00
Price Greenleaf Fund.		
$43,500 Consolidated R. R. of Vermont 5's,	38,280.00	2,175.00
12,200 Rutland R. R. 6's,	12,932.00	732.00
37,200 Rutland R. R. 5's,	34,968.00	1,860.00
1,000 Cheshire R. R. 6's,	1,110.00	60.00
46,500 Ogdens. & L. Champ. R. R. 6's,	46,500.00	2,790.00
23,800 Ogdens. & L. Champ. R. R. income 6's,	10,234.00	
6,000 Ogdens. & L. Champ. R. R. Sinking Fund 8's (paid during the year),		480.00
3,000 Boston & Lowell R. R. 7's,	3,390.00	210.00
31,000 Michigan Central R.R. 8's (paid during year),		1,240.00
8,000 Michigan Air Line R. R. 8's,	8,560.00	640.00
3,000 Chicago, Burl. & Quincy R. R. 4's,	2,880.00	120.00
4,000 Chicago, Burl. & Northern R. R. 5's,	4,000.00	200.00
23,000 Union Pacific Railway 6's,	25,990.00	1,380.00
290 shares Northern R. R. (N. H.),	29,290.00	1,740.00
73 “ Cheshire R. R. preferred,	8,614.00	401.50
800 “ Rutland “ “	28,000.00	1,600.00
40 “ Ogdens. & L. Champ. R. R.,	680.00	
317 “ Boston & Maine “	54,333.33	1,976.00
95 “ Eastern R. R. (sold during the year),		878.75
360 “ Boston & Lowell R. R.,	46,800.00	2,520.00
140 “ Fitchburg R. R. preferred,	14,175.00	280.00
355 “ Old Colony “	63,190.00	2,485.00
142 “ Chicago Burl. & Quincy R. R.,	19,141.60	639.00
20 “ N Y Central & Hudson River “	2,260.00	90.00
292 “ Michigan Central “	28,032.00	1,460.00
122 “ Union Pacific Railway,	7,161.40	
52 “ West End Street Railway,	4,330.00	208.00
50,000 Metropolitan Tel. & Tel. Co. 1st M. 5's,	49,979.17	2,500.00
Lawrence Manufacturing Co.'s Note,	30,000.00	600.00
Lowell “ “ “	30,000.00	693.75
United States Hotel Co.'s Notes,	86,000.00	3,440.00
Mortgages,	11,500.00	640.00
Deposit with New England Trust Co.,	16,513.21	225.67
Totals,	$1,347,544.48	$70,180.44

The other Funds are invested as a whole. The general investments are stated in detail on pages 24 and 25 of this report, but the usual summary statement of them, with the income thereof, is as follows: —

Investments.	Principal, August 1, 1889.	Principal, July 31, 1890.	Income.
Notes, Mortgages, &c., ...	$480,279.50	$564,713.40	$34,849.47
Railroad Bonds and Premiums, . .	2,569,377.29	2,578,663.92	122,832.99
Railroad Stock, ...	387,515.33	419,592.00	16,274.50
Union Stock Yard & Transit Co., . .	28,062.50	28,062.50	2,250.00
Sundry Bonds, ...	99,500.00	100,750.00	4,625.00
Bank Stock, ...	63,964.00		2,686.16
Manufacturing Stock, ...	96,262.29	60,738.54	6,871.00
Real Estate, ...	1,425,957.44	1,671,090.56	78,353.48
Unimproved Lands, ...	71,606.29	41,568.38	
Brattle Street Reversion, ...	1,000.00	1,000.00	
Advances to Dental School, ...	2,216.40		132.98
" " Bussey Trust, ...	40,266.13	37,513.76	1,978.90
" " Dining Hall Association,	25,732.16	24,232.16	1,543.93
" " University Lands, . . .	38,930.36	69,248.18	2,380.84
" " Observatory, ...		200.47	
" " Observatory, Real Estate,	1,616.84	1,197.68	80.84
" " Lawn Tennis Association,	250.00	250.00	
" " School of Veterinary Medicine, ...	17,237.19	16,848.84	1,034.23
Baring Brothers & Company, . . .	744.83	744.83	
Term Bills due in October, ...	99,646.40	105,764.16	
Term Bills overdue, ...	2,136.48	2,262.38	
Cash in Suffolk National Bank, .	75,302.13	42,672.69	
Cash in hands of Bursar, ...	12,209.39	7,196.03	
Totals of general investments,	$5,539,812.95	$5,774,310.48	$275,894.32
Totals of special investments,	1,334,233.30	1,347,544.48	70,180.44
Amounts, . . .	$6,874,046.25	$7,121,854.96	$346,074.76

During the year the new gifts for capital account and the proceeds of sales of bank stocks have been invested in the best productive real estate and in corporation notes. Important changes of the investments in railroad stocks and bonds have been made, chiefly for greater safety, but the amount so invested at the end of the year was about the same as at the beginning. The book valuation of unimproved lands in Cambridge has been diminished as heretofore by crediting to that account $30,037.91 as the net gain, over cost, from sales of various stocks and of the St. Paul, Minneapolis & Manitoba R. R. bonds. All premiums received or paid on railroad bonds sold and bought for the general investments have been carried to the account of advances for railroad bond premiums, and that account has been credited with the sum of $28,213 as the fair yearly repayment from income on account of premiums advanced.

The net income of the general investments ($275,894.32) has been divided at the rate of $4\frac{94}{100}$ per cent among the Funds to which they belong, after allowing to the Carey Building Fund and the Botanical Building Fund a special rate of four per cent on their balances during the period of construction, and to the more recent Construction Funds, to the Bruce Fund, and to the Fund for the Semitic Collection a special rate of three per cent. The fraction, which was $453.08, has been placed as usual to the credit of the University account.

The rate of income compared with that for 1888–89 shows a loss of seventeen one hundredths of one per cent, due chiefly to permanent causes mentioned in the last Annual Statement, but also in part to a temporary loss of income occasioned by improvements upon productive real estate.

The following table shows the income available for the departments dependent upon the College proper, and the expenditures in those departments: —

Interest on Funds for			
University Salaries and Expenses, ...		$31,835.65	
Library Salaries and Expenses (not books), . .		23,388.05	
College Salaries and Expenses, ...		37,736,18	
Gymnasium, and repairs on College buildings, .		none.	
College Term Bills, ...		244,485.57	
Sundry receipts, as follows: —			
Gifts for Salaries, etc., ...	$955.00		
Use of rooms, etc., ...	855.01		
Laboratory fees, etc., ...	19,077.11		
Repayments for printing, sales, etc.,	11,721.44		
		32,608.56	
			$370,054.01

Expended for		
University Salaries and Expenses,	$55,444.49	
Library Salaries and Expenses (not books),	29,917.81	
College Expenses,	74,779.00	
College Salaries, for instruction,	183,366.56	
Gymnasium Expenses,	10,146.05	
Repairs and insurance on College buildings not valued on Treasurer's books,	10,829.41	
		364,483.32
Balance, which has been carried to Stock Account, to repay in part former deficits,		$5,570.69

For the University, College, and Library accounts there has been a large increase of income, chiefly from more tuition fees and the rooms of Walter Hastings Hall, and partly from the recent bequests of John L. Russell, Increase Sumner Wheeler, and Stanton Blake. The expenditure also has been much larger than heretofore, for salaries and for the many other needs of a growing institution. After adding the income of the Stock Account to its capital to make good in part former deficits, and using $6500 of income to repay a part of the advances for University Lands, there has been a nominal surplus of $5570.69, from which must be taken $5037.40 to pay the cost of the Summer Courses for 1890. For the year, therefore, the real surplus has been $533.29. For 1888–89 the surplus was $90.56.

For the Divinity School there has been a deficit of $1628.66, caused by larger expenditure for repairs and improvements and for general purposes, and in spite of increased income. For 1888–89 the deficit was $726.12.

The Law School, owing chiefly to more tuition fees, has had a surplus of $12,193.93, of which $1000 was a gift to be spent in 1890–91. For 1888–89 the surplus was $6525.86.

The Medical School has had a nominal surplus of $326.12; but after setting aside a gift of $1000 for a special use, received but not spent within the year, there has been a real deficit of $673.88. For 1888–89 the real surplus was $34.91.

The Dental School has had a surplus of $2335.38, which has paid off the debt of the School and left a credit balance of $118.98. For 1888–89 the surplus of $2895.27 was used to reduce the debt.

For the Lawrence Scientific School there has been a much greater income from tuition fees, and a greater outlay for instruction. The surplus for the year has been $4053.31. For 1888–89 the surplus was $997.62.

The Museum of Comparative Zoölogy has spent all the income of its restricted Funds as required by the conditions of gift, and has used the surplus income of the Agassiz Memorial Fund as heretofore to pay interest upon, and to repay in part, the principal of the advances from the Memorial Fund, which were used to extend the Museum building and to buy fossils.

For the general account of the Observatory there has been less income and a reduced expenditure, resulting in a deficit of $546.76, which has created a debt of $200.47. For 1888–89 there was a deficit of $1837.11. The large outlays from the Boyden Fund have been made partly out of its capital, as authorized by Mr. Boyden's will. During the year both receipts and payments for the Draper Memorial have been very large.

The Bussey Institution has had a surplus of $2473.14, due partly to increased returns from the Bussey stores. For 1888–89 the surplus was $1639.91.

For the Veterinary School a surplus of $388.35, due chiefly to larger receipts from its Hospital and Forge, has been used to reduce its debt. For 1888–89 there was a deficit of $123.92.

Gifts have been received during the year as follows: —

GIFTS TO FORM NEW FUNDS OR INCREASE OLD ONES.

From John O. Sargent, $112, as the nucleus of a permanent fund for prizes.

From William W. Goodwin, $6000, to found the Charles Haven Goodwin Scholarship, "in memory of Charles Haven Goodwin, a graduate of Harvard College, of the Class of 1888."

From Mrs. Anna Van Nest Gambrill, $10,000, to found the Richard Augustine Gambrill Scholarship, "in memory of Richard Augustine Gambrill, a graduate of Harvard College in the Class of 1872 and of the Law School of Harvard University."

From the trustee under the will of John L. Russell, of Salem, $1000, the amount of Mr. Russell's bequest to the Divinity School, as a testimony of his gratitude and regard, and real estate and securities to the value of $25,370.03 as his residuary legacy to the College, of which the sum of $2000 is "to be specially devoted to the Botanic Garden and to the Herbarium."

From the estate of J. Ingersoll Bowditch, $6000, "to form a fund, the income of which shall be expended under the direction of the Professor of Physiology for the promotion of original investigations in the Physiological Laboratory of the Harvard Medical School," and $2500 for the use of the Observatory.

From William S. Dexter, as agent for an unknown friend of the University, $200,000, for the Retiring Allowance Fund.

From Waldo Higginson, $6000, to found the George B. Sohier Prize Fund.

Additional subscriptions to raise the standard of Medical Education, paid to August 1, 1890, from

Frederick L. Ames	$1,000	H. H. Hunnewell	$1,000
T. O. H. P. Burnham . . .	500	E. V. R. Thayer	500
William Endicott, jr. . . .	1,000	John E. Thayer	500
John L. Gardner	4,000	Nathaniel Thayer	1,000
Augustus Hemenway . . .	500	Miss Anne Wigglesworth .	500
			$10,500

From the trustees under the will of Daniel Treadwell, the additional sum of $1400, on account of Professor Treadwell's residuary legacy for the use of the College Library.

From Edward Russell, $200, to increase the Scholarship founded by him.

From Henry Villard, the fourth instalment of $5000, on account of his subscription towards the Law School Book Fund.

From Samuel S. Shaw, Secretary of the Class of 1853, $1000, to be added to the Fund of the Class of 1853.

From Miss Anna C. Lowell, $1000, to be added to the Lowell Fund for a Botanic Garden.

From Miss Helen C. Bradlee, $200, to be added to the Fund for Religious Services.

From Moses P. White, $1000, to be a
Scholarships and Beneficiary money retu

The total amount of these gifts for
$277,282.03, as is also stated on page .

GIFTS FOR IMMEDIATE U

From George W. Wales, $200, for bo
in continuance of former gifts for the sa

From an anonymous friend, his ann
increase the salary of the Professor of I

From Mrs. Henry Draper of New Yor
of $10,000, to be expended by the Directo
in prosecuting the researches in the ph
spectra, with which the late Dr. Henr
honorably associated.

From John Lowell, on behalf of hims
$400, as the fifth yearly payment for
Scholarships to be known as the Geor
Scholarships.

From the Dante Society, the additio
the purchase of books on Dante.

From Mrs. C. M. Barnard, $600, as he
Warren H. Cudworth Scholarships.

From William G. Farlow, his annual
the salary of the Assistant in the Crypto

From John O. Sargent, one $100 prize,
version of the twenty-ninth Ode of the th
in continuance of former gifts for a like

From Andrew P. Peabody, $200, for
students in the Semitic languages for
1890–91.

From Waldo Higginson, $250, for th
Prize for the academic year 1889–90.

From Theodore Lyman, $1266.03,
amount expended by the College for th
Johnston gate-way.

From an anonymous friend, $20, for
nection with the Johnston gate-way.

From the Society for Promoting Th

$406.69, to be applied to the remodelling of the interior of Divinity Hall according to plans approved by the Faculty.

From the trustees under the will of Walter Hastings, $36,000 additional, for the erection of a dormitory on the grounds of Harvard College, to be called Walter Hastings Hall.

From Henry F. Sears, $35,000, to be used in erecting an addition to the Medical School building for the departments of Pathology and Bacteriology.

From Henry Astor Carey, $11,000, to be added to his former gift of $25,000 for the erection of a building for athletic purposes.

Additional subscriptions towards Professor Cooke's addition to the University Museum, paid to August 1, 1890, from

Francis Bartlett	$15,000	Nathaniel Thayer	$2,000
Mrs. G. L. Pratt	2,000	Stephen Salisbury	500
H. H. Hunnewell	2,000		$21,500

Additional subscriptions towards building and furnishing an addition to the University Museum for the Botanic Department, paid to August 1, 1890, from

Augustus Hemenway	$100	Nathaniel C. Nash	$20,000
Mrs. Samuel D. Warren	3,000		$23,100

Additional subscriptions from graduates of the Dental School, to be applied towards the immediate wants of the School, paid to August 1, 1890, from

Charles H. Abbot	$25	P. B. Laskey	$5
C. A. Brackett	25	Frank Perrin	10
Edwin P. Bradbury	25	William H. Potter	5
Thomas Fillebrown	20	James Shepherd	5
H. W. Gillett	5	Charles Wilson	10
			$135

Subscriptions for the present use of the Herbarium paid to August 1, 1890, from

Frederick L. Ames	$500	Henry Lee	$500
B. P. Cheney	500	Augustus Lowell	250
H. H. Hunnewell	500	Nathaniel C. Nash	250
A friend	500	F. H. Peabody	100
Nathaniel T. Kidder	500	John Donnell Smith	250
			$3,850

Subscriptions for the purchase of the James Herbarium of Mosses from

E. S. Dixwell	$50	N. T. Kidder	$50
W. G. Farlow	50	F. H. Peabody	50
Mrs. Asa Gray	50	G. Putnam	50
A friend	100	C. S. Sargent	50
G. G. Kennedy	50		$500

From Francis G. Peabody, $100, for the class-room library in the "Ethics of the Social Questions."

From Albert Bushnell Hart, $28.02, for the working library of books on American History and Politics.

From Carleton Hunneman, $3, for the German class-room library.

From an anonymous giver, $5, without restrictions.

The total amount of these gifts for immediate use is $162,225.49, as is also stated on page 18 of this report.

OTHER GIFTS ACKNOWLEDGED BY THE CORPORATION.

From Henry L. Higginson, a tract of land in Brighton containing about twenty-one acres of upland and ten acres of marsh, to be called "The Soldier's Field," and used for the present as a playground for the students.

From Mrs. Elizabeth C. Ware and Miss Mary L. Ware, the offer of a collection of glass models of plants, flowers, and analytical details of vegetable structure, now in process of construction by Leopold and Rudolf Blaschka, of Germany, and provision for their proper exhibition in the University Museum, "as a memorial of the late Dr. Charles Eliot Ware, of the Class of 1834."

From Mrs. George von L. Meyer, the wrought-iron work for the Johnston gate-way at the main entrance to the College Yard.

From the Thomson-Houston Electric Co., an electric motor with its attachments, for the Jefferson Physical Laboratory.

From George B. Dorr, two engravings of the Coliseum, by Piranesi, for the library of the Jefferson Physical Laboratory.

From Radtke, Lauckner & Co., of New York, six proofs of modern etchings to be added to the Gray Collection of Engravings.

By the bequest of William T. Carleton, his copy of a portrait of Galileo, for the Observatory.

From a committee of the Class of 1846, a portrait of George Frisbie Hoar.

From Richard S. Greenough, his bust in bronze of the historian George Bancroft.

From the Chamber of Commerce of the State of New York, a photograph of a portrait of Alexander Hamilton.

From John Corbett, member of Parliament for Mid-Worcestershire, through Miss Annie Wakeman, a miniature of George Washington.

From George G. Kennedy, a portrait of Clarke Gayton Pickman, for the College Library.

From Stephen H. Williams, a sketch of the life of Mr. E. Price Greenleaf, and a genealogical record of the Greenleaf family.

Through George E. Ellis, an ancient watch from the estate of Mrs. Ellen Marett Gifford, of New Haven.

From Fitz-Edward Hall, Sanskrit manuscripts, for the College Library.

From the sisters of the late George W. Batchelder, his library, consisting of about two hundred and twenty-five bound volumes, and a collection of unbound volumes and magazines, given in accordance with Captain Batchelder's wish.

From Henry J. Bigelow, the diagrams used by him to illustrate his lectures, for the Medical School.

From Mrs. Emily A. Burleigh, a Syriac manuscript, for the Semitic Museum.

From Epes S. Dixwell, thirteen volumes of the Journal of the Oriental Society, for the Semitic department.

From the Massachusetts Society for Promoting Agriculture, its manikin horse, for the Veterinary School.

Notice was received from the trustee under the will of William Brown Spooner that on the first day of May, 1890, and quarterly thereafter, he should pay for the use of the Divinity School the interest of $10,000; and, on the termination of the trust, the principal, in accordance with the terms of Mr. Spooner's bequest.

EDWARD W. HOOPER, *Treasurer.*

BOSTON, December 15, 1889.

ACCOUNTS.

General Statement of Receipts and Disburseme
for the year endi

INCOME.

Interest on notes, mortgages, and advances,		$49,831
" " Massachusetts 5's,		1,53
" " Policies Mass. Hospital Life Insurance Co.,		34
" " Deposit with New England Trust Co.,		22
" " Metropolitan Telephone & Telegraph Co. 5's,		7,12
" " Railroad Bonds (after deductions for sinking premiums)		
Atchison, Topeka & St. Fé 7's,	$3,794.50	
Buffalo, Bradford & Pittsburg 7's,	4,200.00	
Burlington & Mo. River in Neb. 6's,	18,451.42	
Atchison & Nebraska 7's,	9,321.00	
Marion & McPherson 7's,	5,701.62	
Kan. City, St. Jos. & Council Bluffs 7's,	3,157.00	
Kansas City, Topeka & Western 7's,	2,215.17	
Fort Scott, So. E. & Memphis 7's,	7,278.00	
Kansas City & Cameron 10's,	8,805.00	
Lincoln & No. Western 7's,	1,750.00	
Eastern Railroad sterling 6's,	4,268.85	
Fremont, Elkhorn & Mo. Valley 6's,	600.00	
Chicago, Burlington & Quincy 4's,	120.00	
Eastern Railroad 6's,	18,888.00	
Consolidated R. R. of Vermont 5's,	2,175.00	
Rutland Railroad 6's,	732.00	
Rutland Railroad 5's,	1,860.00	
Cheshire Railroad 6's,	60.00	
Michigan Central 8's,	1,240.00	
Michigan Air Line 8's,	640.00	
Union Pacific 6's,	1,380.00	
Chicago, Burlington & Quincy 5's,	3,000.00	
Kansas City, Ft. Scott & Gulf 7's,	2,255.92	
Chicago & Michigan Lake Shore 8's,	480.00	
Ogdens. & Lake Champlain 6's,	2,790.00	
Ogdens. & Lake Champlain 8's,	480.00	
Boston & Lowell 7's,	210.00	
Chicago, Burlington & Northern 5's,	200.00	
St. Paul, Minneapolis & Manitoba 5's,	3,988.39	
Chicago, Burlington & Quincy 7's,	24,592.12	
Union Pacific R'y Omaha Bridge 5's,	4,886.00	139,519
Dividends on Stocks.		
Charles River National Bank,	240.00	
First (Cambridge) " "	225.00	
Fitchburg " "	72.00	
Massachusetts " "	60.00	
Merchants " "	792.00	
New England " "	129.50	
Old Boston " "	200.00	
Hingham " "	17.50	
Bank taxes refunded,	967.66	2,703
Amount carried forward,		$201,283

by the Treasurer of Harvard College, July 31, 1890.

EXPENSES.

Paid to account of Expenses in the

University, as per Table I. (page 42).		
Fellowships,	$10,225.00	
Prizes,	350.00	
Salaries and other expenses,	46,563.65	
Advances repaid with interest,	8,880.84	66,019.49
College, as per Table II. (page 44).		
Salaries for instruction,	183,366.56	
Repairs and insurance on College Edifices, not valued on Treasurer's books,	10,829.41	
General expenses,	74,779.00	
Scholarships,	29,303.33	
Beneficiaries,	19,099.64	
Prizes,	889.12	
Botanic Garden,	7,990.87	
Herbarium,	3,048.60	
Hemenway Gymnasium,	10,146.05	
Jefferson Physical Laboratory,	3,670.15	
Quarterly Journal of Economics,	688.97	
Account of new Botanical Building,	15,101.76	
Books for special departments,	1,114.73	
Apparatus, &c., for Greek Dep't lecture room,	500.00	
Account of new Athletic Building,	38,395.12	
Account of new building for departments of Mineralogy and Botany,	38,052.62	
New gate-way,	11,525.55	
Printing, from Publication Funds,	665.25	449,166.73
Library, as per Table III. (page 51).		
Books,	15,137.83	
Salaries and other expenses,	29,917.81	45,055.64
Divinity School, as per Table IV. (page 53).		
Salaries and other expenses,	27,298.80	
Scholarships and Beneficiaries,	1,946.97	29,245.77
Law School, as per Table V. (page 55).		
Salaries and other expenses,		40,260.62
Medical School, as per Table VI. (page 56).		
Salaries, Laboratory expenses, &c.,	54,221.56	
Scholarships and Beneficiaries,	1,695.00	
Fees repaid to Instructors,	2,435.00	
Boylston Medical Prizes,	477.50	
Warren Anatomical Museum,	374.93	
Account of new addition,	9,050.00	
General expenses,	11,125.85	79,379.84
Amount carried forward		**$709,128.09**

General Statement of Receipts and Disbursements for the year ending

INCOME.

Amount brought forward, ...		$201,283.51
Dividends on Stocks.		
Amoskeag Manufacturing Co., . . .	$1,200.00	
Amory " " . . .	108.00	
Massachusetts " " . . .	420.00	
Merrimack " " . . .	1,190.00	
Nashua " " . . .	1,185.00	
Stark Mills, ...	480.00	
Wamsutta Mills, ...	288.00	
Pacific Mills, ...	2,000.00	6,871.00
Chicago, Burlington & Quincy R. R., .	1,940.00	
Pittsfield & North Adams R. R., . . .	157.50	
Eastern R. R., preferred, ...	11,316.00	
Cheshire R. R., preferred, ...	401.50	
Rutland R. R., preferred, ...	1,600.00	
Boston & Maine R. R., ...	1,976.00	
Old Colony R. R., ...	2,485.00	
New York Cent. & Hud. River R. R.,	90.00	
Michigan Central R. R., ...	1,460.00	
Boston & Lowell R. R., ...	2,520.00	
Northern R. R. (N. H.), ...	1,740.00	
West End Street Railway Co., ...	208.00	
Union Stock Yard & Transit Co., . . .	2,250.00	
Fitchburg R. R., preferred, ...	280.00	
Eastern R. R., common, ...	878.75	
N. Y., New Haven & Hartford R. R., .	3,500.00	32,802.75
Real Estate, from rents, &c. (gross receipts).		
Cambridge (Houses and Lands), ...	37,831.27	
Boston (general investments), ...	85,467.71	
Bussey real estate, ...	38,723.23	
Sundry estates, ...	11,051.15	173,073.36
Term Bills.		
College, as per Table II., ...	244,485.57	
Divinity School, as per Table IV., ...	4,678.98	
Law School, as per Table V., ...	36,465.00	
Medical School, as per Table VI., ...	58,148.62	
Dental School, as per Table VII., ...	5,220.00	
Lawrence Scientific School, as per Table VIII.,	9,995.20	
Bussey Institution, as per Table X., ...	230.00	
School of Veterinary Medicine, as per Table X.,	2,395.00	361,618.37
Sundries.		
William Pennoyer Annuity, ...	245.62	
Professor Gray's copyrights, ...	2,382.05	
Trustee of Thayer Scholarships, ...	3,266.67	
Amounts carried forward, ...	$5,894.24	$775,648.99

by the Treasurer of Harvard College, July 31, 1890.

EXPENSES.

Amount brought forward, ...			$709,128.09
Dental School, as per Table VII. (page 58).			
Salaries and other expenses, ...			7,973.77
Lawrence Scientific School, as per Table VIII. (page 59).			
Salaries and other expenses, ...		$14,963.18	
Museum of Comparative Zoölogy, ...		28,370.86	43,333.54
Observatory, as per Table IX. (page 60), ...			55,508.72
Bussey Institution, as per Table X. (page 61),		10,052.47	
School of Veter'y Medicine, as per Table X. (page 61),		19,310.10	
Arnold Arboretum, as per Table X. (page 61),		7,930.05	37,292.62
Real Estate, expenses.			
Insurance.			
Cambridge, ...	$337.50		
Boston (general investments), . .	536.23		
Bussey real estate, ...	96.90	970.68	
Taxes.			
Cambridge, ...	2,861.89		
Boston (general investments), . .	14,209.35		
Bussey real estate, ...	7,469.80		
Sundry estates, ...	557.92	25,098.96	
Interest.			
Bussey real estate (on advances), ...		1,978.90	
Repairs, improvements, care, cleaning and sundries.			
Cambridge, ...	13,051.31		
Boston (general investments), . .	15,030.26		
Bussey real estate, ...	1,606.55		
Sundry estates, ...	69.20	29,757.32	
Heating and hoisting for **Bussey** stores, including repairs and renewal of apparatus, ...	6,079.96		
Less for sales of heat and power, .	2,555.00	3,524.96	61,830.77
Amount carried forward, ...			$914,567.51

by the Treasurer of Harvard College,
July 31, 1890.

EXPENSES.

Amount brought forward,		$914,567.51
Annuities.		
Bussey,	6,300.00	
Gore,	600.00	
Lucy Osgood,	420.00	
Class of 1802,	120.00	
Bemis,	2,565.60	
Gurney,	1,000.00	11,005.60
Class Funds.		
Paid the Secretary of the **Class of 1834,**	$40.00	
" " " " **1853,**	105.00	145.00
Walter Hastings Building Fund.		
Paid on account of the erection of **Walter Hastings** Hall (additional),		99,906.15
Sundry payments from income.		
To the Treasurer of the Museum of Fine Arts, from **Gray** Fund for Engravings,	817.45	
The income of the **Daniel Williams** Fund for the benefit of the Herring Pond and Mashpee Indians,	606.51	
The income of the **Sarah Winslow** Fund, to the Minister and Teacher at Tyngsboro', Mass.,	239.46	
For account of the Semitic collection,	1,366.97	3,030.39
Total amount of expenses,		$1,028,654.65

INVESTMENTS AND SUNDRY PAYMENTS.

Burl. & Mo. River (Neb.) R. R. 6's,	$7,000 cost,	$7,560.00	
Chic. Burl. & Quincy R. R. cons. 7's,	374,000 "	486,200.00	
" " " " " conv. 5's,	100,000 "	110,381.30	
Union Pacific R'y Omaha Bridge 5's,	75,000 "	77,062.50	
Massachusetts 5's, 1894 (**Paine** Fund),	1,000 "	1,090.00	
Paid for accrued interest and expenses on the above bonds,		8,542.76	690,836.56
Amount carried forward,			$1,719,491.21

by the Treasurer of Harvard College,
July 31, 1890.

INVESTMENTS AND SUNDRY PAYMENTS.

Amount brought forward,		$1,719,491.21
1,886 shares Boston & Maine R. R. preferred (exch.),	245.180.00	
79 " " " " " common (exch.),	11,400.00	
700 " N. Y., N. Haven & Hartford R. R.,	174.412.00	430,992.00
5% of subscription for $25,000 Chicago Gr. Junction Railways & Union Stock Yards Coll. Trust 5s,		1,250.00
Policy of Mass. Hospital Life Insurance Co.,		1,000.00
Paid on account of the extension of the Natural History Laboratories, and for purchase of fossils,	12,371.91	
Less amount repaid by Museum of Comparative Zoölogy,	3,368.83	9,003.08
Invested in notes of Manufacturing Companies, &c.,	1,375,500.00	
Less mortgages and notes paid off,	1,225,000.00	150,500.00
Purchase of **Cole** Estate, Washington St., Boston,		250,000.00
" " **Rindge** marsh, Brighton,		2,600.00
Advanced for purchase of **Willard** Estate,		29.984.00
Improvements on **Amory** Estate, Boston,		6,941.31
" " **Foxcroft** Estate, Cambridge,		4,233.82
Property received as the residuary legacy of **John L. Russell.**		
$6,400 United States registered 4's,	8,124.00	
5,000 State of Maine 6's,	5,300.00	
10 shares Hingham National Bank,	725.00	
10 " First Salem " "	1,307.50	
5 " Mercantile " " Salem,	623.75	
1 " Great Pasture Company, "	76.00	
50 " Tredegar Company,	3,000.00	
Estate 22 Lafayette St., Salem,	4,968.87	
Deposit in Hingham Savings Bank,	980.22	
" " Salem " "	264.69	25,370.03
Amount carried forward,		$2,631,365.45

by the Treasurer of Harvard College,
July 31, 1890.

Amount brought forward, ...		**$2,631,365.45**

Balance, July 31, 1890.

Cash in Suffolk National Bank, ...	**$42,672.69**	
Cash in New England Trust Co., ...	**16,513.21**	
Cash in hands of Charles F. Mason, Bursar, . .	**7,196.03**	
Term Bills due October, 1890, ...	**105,764.16**	
" " overdue, ...	**2,262.38**	**174,408.47**
Total, ...		**$2,805,773.92**

Amount brought forward,			$4,652.410.34
Sundry Stocks.			
Boston & Maine R. R. preferred,	1,886 shares,	245,180.00	
N. Y., New Haven & Hartford R. R.,	700 “	174,412.00	
Union Stock Yard & Transit Co.,	250 “	28,062.50	447,654.50
Real Estate.			
Houses and Lands in Cambridge yielding income,		353,585.06	
Unimproved Lands in Cambridge,		41,568.38	
Amory Estate, Franklin Street, Boston,		172,557.12	
Webb Estate, Washington Street, Boston,		164,604.79	
Andrews Estate, Washington Street, Boston,		165,562.00	
Gray Estate, Washington Street, Boston,		487,119.12	
Cole Estate, Washington Street, Boston,		250,000.00	
Estate on Hawley Street, Boston,		38,650.78	
Estate on Hawkins Street, Boston,		29,476.09	
Reversion of Buildings on Brattle Street, Boston,		1,000.00	
Improvements on Gray and Andrews Estates,		9,535.60	1,713,658.94
Sundries.			
Due from Dining Hall Association,		24,232.16	
“ “ Lawn Tennis Association,		250.00	
“ “ Bussey Trust,		37,513.76	
“ “ School of Veterinary Medicine,		16,848.84	
“ “ Observatory,		200.47	
Advances to Observatory real estate,		1,197.68	
“ “ University Lands,		69,248.18	
Baring Brothers & Co.,		744.83	
Term bills due October, 1890,		105,764.16	
“ “ overdue,		2,262.38	258,262.46
Cash in Suffolk National Bank,		42,672.69	
“ “ hands of Charles F. Mason, Bursar,		7,196.03	49,868.72
Total,			$7,121,854.96

The foregoing Property represents the following Funds and Balances, and is answerable for the same.

UNIVERSITY FUNDS.

Principal, Aug. 1, 1889.		Principal, July 31, 1890.	
$97,357.41	Stock Account (so called), . .	$107,737.54	
125,138.74	Ins. and Guaranty F'd (so called), .	125,138.74	
15,750.00	**Israel Munson** Fund, ...	15,750.00	
16,871.63	**Leonard Jarvis** "	16,871.63	
9,000.00	**Sever** Fund (unrestricted), . . .	9,000.00	
25,000.00	**John C. Gray** Fund, ...	25,000.00	
115,966.56	**George B. Dorr** Fund, ...	115,966.56	
5,000.00	**Seth Turner** Fund, ...	5,000.00	
113,817.44	**Francis E. Parker** Fund, . . .	113,817.44	
30,000.00	**William Perkins** Fund,. . . .	30,000.00	
	John L. Russell Fund, ...	25,370.03	
5,000.00	**Stanton Blake** Fund, ...	5,000.00	
62,875.31	President's Fund, ...	62,981.34	
154.98	**Thomas Cotton** Fund, ...	155.13	
5,250.00	**Samuel D. Bradford** Fund, . . .	5,250.00	
35,027.04	Retiring Allowance Fund, ...	242,211.97	
22,000.00	**John Cowdin** Fund, ...	22,000.00	
56,391.27	**John Parker** Fellowships, . . .	56,376.99	
10,727.05	**Robert Treat Paine** Fellowship, .	10,756.96	
10,602.83	**Harris** Fellowship, ...	10,626.62	
11,312.90	**John Thornton Kirkland** Fellows'p,	10,846.76	
10,839.08	**James Walker** Fellowship, . . .	10,999.53	
31,644.07	**Rogers** Fellowships, ...	32,082.28	
10,127.75	**Henry Lee** Memorial Fellowship, .	10,628.07	
10,127.75	**Ozias Goodwin** Memorial Fellows'p,	10,178.07	
10,127.75	**H. B. Rogers** Memorial Fellowship,	10,178.07	
81,943.73	**Henry T. Morgan** Fund, . . .	81,943.73	
11,139.44	**John Tyndall** Scholarship, . . .	11,189.70	
2,206.29	**Sumner** Prize Fund, ...	2,215.27	
	George B. Sohier Prize Fund,. .	6,148.20	
100.00	**John O. Sargent** Prize Fund, . .	316.40	
150.00	**Robert N. Toppan** Prizes . . .	150.00	
150.00	Dante Prizes, ...	150.00	
	Semitic Prizes, ...	200.00	
6,541.69	Lectures on Political Economy Fund,	6,464.86	
20,670.44	**Walter Hastings** Fund, ...	21,303.78	$1,220,005.67

COLLEGE FUNDS.

27,748.64	**Alford** Professorship, ...	27,748.64	
28,337.40	**Boylston** "	28,337.40	
21,619.50	**Eliot** "	21,619.50	
10,000.00	**Eliot** " (**Jon. Phillips's gift**)	10,000.00	
3,500.01	**Erving** "	3,500.01	
$1,060,216.70	. . . Amounts carried forward, . .	$91,205.55	$1,220,005.67

Principal, Aug. 1, 1889.		Principal, July 31, 1890.	
$1,060,216.70	. . . Amounts brought forward, . .	$91,205.55	$1,220,005.67
35,990.99	**Fisher** Professorship, ...	35,990.99	
20,217.08	**Hersey** “	20,217.08	
21,744.18	**Hersey** “ **(Thomas Lee's gift)**,	21,744.18	
3,747.33	**Hollis** “ (Mathematics),	3,747.33	
34,517.60	**Hollis** “ (Divinity), . . .	34,517.60	
43,062.93	**McLean** “	43,062.93	
21,000.00	**Perkins** “	21,000.00	
25,020.19	**Plummer** “	25,020.19	
52,500.00	**Pope** “	52,500.00	
56,441.25	**Rumford** “	56,441.25	
23,139.83	**Smith** “	23,139.83	
176,431.83	**Gurney** Fund, ...	180,772.57	
16,240.38	Fund for Permanent Tutors, . . .	16,240.38	
15,796.97	**Lee** Fund for Reading, ...	15,796.97	
145,000.00	**Class Subscription** Fund, . . .	145,000.00	
2,801.90	**Paul Dudley** Fund for Lectures, .	2,840.32	
31,500.00	**Jonathan Phillips** F'd (unrestricted),	31,500.00	
1,050.00	**John A. Blanchard** “ “	1,050.00	
4,879.48	**John W P Abbot** “ “	5,120.50	
13,220.50	**Daniel H. Peirce** “ “	13,286.60	
6,230.00	**Daniel Austin** “ “	6,230.00	
1,031.30	Scholarship & Benef. money returned,	2,088.41	
344.48	**Henry Flynt's** Bequest, ...	343.93	
3,246.27	**Abbot** Scholarship, ...	3,406.62	
1,030.94	**Alford** “	1,081.87	
5,293.67	**Bartlett** “	5,305.19	
5,626.67	**Bassett** “	5,634.64	
11,822.21	**Bigelow** “	11,906.22	
109,514.61	**Bowditch** “	109,424.65	
354.34	**Bright** “ (balance), . . .	339.34	
3,339.00	**Browne** “	3,503.95	
6,141.09	**Ruluff S. Choate** Scholarship, . .	6,144.46	
7,340.11	**Class of 1802** Scholarship, . . .	7,382.71	
2,949.56	“ **1814** “	2,945.29	
5,427.63	“ **1815** “ **(Kirkland)**,	5,545.77	
3,876.44	“ **1817** “	3,917.91	
3,030.95	“ **1828** “	3,180.68	
3,009.30	“ **1835** “	3,157.94	
4,092.92	“ **1841** “	4,095.11	
4,281.70	“ **1852** “ **(Dana)**, .	4,493.23	
10,000.00	“ **1856** “	10,000.00	
2,928.66	“ **1867** “	3,073.35	
9,517.07	**Crowninshield** “	9,987.21	
600.00	**Warren H. Cudworth** Scholar'ps,	600.00	
5,382.09	**George & Martha Derby** Scholar'p,	5,397.96	
5,349.07	**W. S. Eliot** Scholarship, ...	5,363.31	
5,846.17	**Farrar** “	5,834.96	
	Richard Augustine Gambrill Sch.	10,061.75	
$2,032,125.39	. . . Amounts carried forward, .	$1,080,640.73	$1,220,005.67

Principal, Aug. 1, 1889.		Principal, July 31, 1890.	
$2,032,125.39	. . . Amounts brought forward,	$1,080,640.73	$1,220,005.67
	Charles Haven Goodwin Sch.	6,000.00	
3,055.10	Greene Scholarship,	3,206.02	
5,769.71	Levina Hoar Scholarship,	5,804.75	
9,132.88	Hodges "	9,584.05	
5,280.15	Hollis "	5,340.98	
2,761.46	Matthews " (balance),	3,547.06	
5,110 26	Merrick "	5,162.69	
7,496.03	Morey "	7,566.33	
6,676.92	Pennoyer "	6,682.70	
3,092.51	Perkins "	3,245.30	
824.90	Rodger "	865.66	
3,279.69	Henry B. Rogers "	3,291.72	
2,575.83	Edward Russell "	2,912.96	
5,515.89	Mary & Leverett Saltonstall Sch.,	5,788.38	
911.10	Dorothy Saltonstall Scholarship,	956.10	
3,184.46	Sever Scholarship,	3,191.75	
9,682.40	Sewall "	9,760.69	
46,219.61	Shattuck "	46,452.88	
5,628.18	Slade "	5,739.49	
3,187.42	Story "	3,344.85	
2,408.64	Stoughton "	2,463.67	
4,037.55	Gorham Thomas "	4,037.03	
6,921.50	Toppan "	6,963.45	
24,456.76	Townsend "	24,464.94	
3,991.29	Walcott "	3,988.45	
10,200.33	Whiting "	10,204.21	
9,870.95	Exhibitions,	9,833.88	
1,797.37	Palfrey Exhibition,	1,796.14	
1,200.00	Samuel Ward Fund,	1,200.00	
1,517.95	John Glover "	1,592.94	
10,997.56	Quincy Tufts "	10,984.26	
5,372.57	Day "	5,368.00	
10,382.96	Munroe "	10,375.88	
9,558.24	Price Greenleaf Aid,	8,102.23	
4,111.30	Boylston Prizes for Elocution,	4,059.38	
12,891.62	Bowdoin Prizes for Dissertations,	13,178.48	
1,209.75	Hopkins Gift for "Deturs,"	1,199.20	
650.04	Chauncey Wright Fund,	682.15	
50,000.00	Increase S. Wheeler Fund,	50,000.00	
833.57	Fund for Religious Services,	1,033.57	
15,348.61	John E. Thayer Fund,	15,417.88	
6,332.88	Classical Publ. F'd of Class of 1856,	6,345.73	
42,780.76	Botanic Department Fund,	42,099.18	
55,882.31	Lowell Fund for a Botanic Garden,	56,882.31	
18,932.62	Herbarium Fund,	23,695.86	
26,759.79	Carey Building Fund,	141.29	
3,357.91	Botanical Building Fund,	2,882.44	
75,000.00	Physical Laboratory Endowment,	75,000.00	1,634,458.60
$2,578,314.67	. . . Amounts carried forward,	$1,618,077.64	$1,220,005.67

Principal, Aug. 1, 1889.		Principal, July 31, 1890.	
$2,578,314.67	. . . **Amounts brought forward,**	$1,613,077.64	$1,220,005.67
343.33	**Jefferson** Physical Laboratory . .	395.12	
10,162.50	**S. Johnston** Bequest for gate-way, .		
18,015.00	Building Fund for Addition to Museum,	5,309.34	
1,634.25	Sundry Gifts (unexpended balances),	1,385.29	1,620,167.39

LIBRARY FUNDS.

100,000.00	**Eben Wright** Fund, ...	100,000.00	
26,085.63	**Constantius** Fund, ...	26,004.25	
500.00	**Jarvis** Fund, ...	500.00	
9,172.25	**Daniel Treadwell** Fund, ...	10,572.25	
10,512.86	Subscription for Library, ...	10,567.50	
2,106.93	**Bowditch** Fund, ...	2,118.84	
52.46	**Bright** "	112.57	
5,350.88	**Denny** "	5,306.39	
5,560.00	**Farrar** "	5,448.20	
3,091.73	**Haven** "	3,135.50	
9,980.48	**Hayes** "	10,093.91	
5,290.10	**Hayward** "	5,266.56	
2,390.02	**Hollis** "	2,397.98	
2,092.63	**Homer** "	2,105.45	
5,367.85	**Lane** "	5,310.50	
21,945.92	**Lowell** "	22,454.50	
60,034.76	**Minot** "	60,041.01	
7,120.59	**Mary Osgood** "	6,998.98	
7,129.85	**Lucy Osgood** "	7,163.19	
5,351.45	**Salisbury** "	5,349.07	
20,039.24	**Sever** "	20,092.68	
4,094.31	**Shapleigh** "	4,117.88	
37,386.73	**Sumner** "	37,509.36	
5,006.90	**Tucker** "	5,047.32	
5,281.36	**Ward** "	5,298.65	
417.37	**Wales** "	196.16	
16,009.16	**Walker** "	15,937.04	
760.00	**Waterston** "	581.54	
257.18	Sundry gifts, etc. (unexpended balances),	204.24	379,926.52

DIVINITY SCHOOL FUNDS.

29,032.03	Divinity School (balance), ...	27,403.37	
37,583.74	**Bussey** Professorship, ...	37,583.74	
16,015.81	**Parkman** "	16,015.81	
6,008.43	**Hancock** "	6,008.43	
47,845.73	**Winn** Prof. of Ecclesiastical History,	48,345.73	
20,280.38	**Dexter** Lectureship, ...	20,280.38	
9,184.69	**Henry Lienow** Fund, ...	9,184.69	
5,250.00	**Mary P Townsend** "	5,250.00	
2,100.00	**Winthrop Ward** "	2,100.00	
1,050.00	**Samuel Hoar** "	1,050.00	
$3,156,209.20	. . . **Amounts carried forward,** .	$173,222.15	$3,220,099.58

Principal, Aug. 1, 1889.	
$3,156,209.20	. . . Amounts brought forward, .
1,050.00	**Abraham W. Fuller** Fund, . .
1,050.00	**Caroline Merriam** " . .
7,875.00	**Joseph Baker** " . .
40,000.00	**Th. Tileston** of New York Endow
10,000.00	**Henry P. Kidder** Fund, . . .
17,000.00	**Oliver Ames** Fund, ...
1,000.00	**Abby Crocker Richmond** Fund
71,427.02	New Endowment, ...
	John L. Russell Fund, . . .
1,235.04	**John W. Quinby** Fund, . .
911.34	**Lewis Gould** " . .
2,177.95	**Joshua Clapp** " . .
525.00	**Hannah C. Andrews** " . .
1,000.00	**Adams Ayer** " . .
890.00	**Daniel Austin** " .
13,916.70	**Jackson** Foundation, ...
5,143.57	**Thomas Cary** Scholarships, .
2,419.67	**George Chapman** " .
3,931.84	**Joshua Clapp** " .
4,482.98	**J. Henry Kendall** " .
3,238.50	**Nancy Kendall** " .
12,839.56	**Abner W. Buttrick** Fund, . .
1,050.00	**William Pomroy** " . .
2,893.50	Beneficiary money returned, . .

LAW SCHOOL FUN

20,338.69	Law School (balance), ...
15,750.00	**Dane** Professorship, ...
23,979.82	**Bussey** " . . . . .
8,340.81	**Royall** " . . . . .
94,994.97	New " . . . . .
37,021.25	Law School Book Fund, . . .

LAWRENCE SCIENTIFIC SCHOOL, OF COMPARATIVE ZOÖLOG

1,211.81	Lawrence Scientific School (balanc
38,807.17	Professorship of Engineering, .
61,536.43	**Abbott Lawrence** Fund, . . .
50,375.00	**James Lawrence** " . . .
30,686.85	**John B. Barringer** " . . .
100,110.00	**Sturgis Hooper** " . . .
50,000.00	**Gray** Fund for Zoölogical Museu
297,938.10	**Agassiz Memorial** Fund, . .
7,594.01	Teachers' and Pupils' " . .
117,469.34	Permanent Fund, ...
7,740.66	**Humboldt** " . . . . .
$4,325,656.78	. . . Amounts carried forward, .

Principal, Aug. 1, 1889.		Principal, July 31, 1890.	
$4,325,656.78	. . . Amounts brought forward, .		$4,585,903.67
	MEDICAL SCHOOL FUNDS.		
57,886.65	Medical School (balance), ...	58,212.77	
19,192.65	**Jackson** Medical Fund, ...	19,192.65	
17,129.20	**Geo. C. Shattuck** "	17,129.20	
12,880.16	**Warren** Fund for Anatom'l Museum,	13,141.50	
3,619.53	**Boylston** Fund for Medical Prizes,	3,320.86	
3,256.99	**Boylston** " " " Books,	3,417.89	
2,078.25	Medical Library Fund, ...	2,027.12	
2,000.00	**Quincy Tufts** Medical Fund, . .	2,000.00	
25,512.68	**Edward M. Barringer** " . .	25,512.68	
15,765.11	**Mary W Swett** Fund, ...	15,765.11	
20,000.00	**Samuel W. Swett** "	20,000.00	
1,836.08	**Samuel E. Fitz** "	1,836.08	
	Henry F Sears Building Fund, .	26,892.04	
	J Ingersoll Bowditch Fund, . .	6,172.90	
9,750.00	New Subscription Fund, ...	20,250.00	
217.86	**John Foster** Income for Medical Students, ...	190.33	
5,138.38	**D. W. Cheever** Scholarship, . .	5,192.20	240,253.33.
	OBSERVATORY FUNDS.		
346.29	Observatory (balance), ...		
110,293.88	**Edward B. Phillips** Fund, . . .	110,293.88	
21,000.00	**James Hayward** " . . .	21,000.00	
26,879.24	**David Sears** " . . .	27,543.15	
12,145.85	**Josiah Quincy** " . . .	11,721.16	
2,000.00	**Charlotte Harris** " . . .	2,000.00	
5,000.00	**Thomas G. Appleton** " . . .	5,000.00	
13,380.00	**Augustus Story** Fund, ...	13,380.00	
50,000.00	Observatory Endowment, ...	50,000.00	
120,110.35	**Robert Treat Paine** Fund, . .	120,110.35	
50,000.00	**Paine** Professorship	50,000.00	
230,208.14	**Uriah A. Boyden** Fund, ...	228,047.31	
50,062.50	**Bruce** Fund, ...	43,611.14	
	J. Ingersoll Bowditch Fund, . .	2,500.00	
772.93	**Draper Memorial** (balance), . .	799.57	686,006.56
	OTHER FUNDS FOR SPECIAL PURPOSES.		
413,092.80	**Bussey** Trust (income thereof, ½ to Bussey Institution, ¼ to Law School, and ¼ to Divinity School), . . .	413,092.80	
6,433.53	Bussey Institution (balance), . . .	8,906.67	
609.02	**Bussey** Building Fund, ...	609.02	
154,468.50	**James Arnold** "	154,850.04	
4,581.08	Arnold Arboretum "	6,050.61	
$5,793,304.48	. . . Amounts carried forward, .	$583,509.14	$5,512,163.56

Changes in the Funds during the year ending July 31, 1890.

Total amount of Funds and balances, July 31, 1890, as before stated, ...		$7,121,854.96	
Total amount of Funds and balances, August 1, 1889, as before stated, ...		6,874,046.25	
Showing a total increase during the year of . . .			$247,808.71
Which is made up as follows : —			
Gifts forming new Funds or increasing old ones, .		277,282.03	
Increase of Funds established during the year, . .		382.85	
Credit balances created, " " " . .		36,633.16	
Increase of Stock Account, by excess of income over expenditure in College, Library, and University accounts, ...		5,570.69	
		$319,868.73	
Deduct from this amount			
Decrease more than increase of Funds and balances, which appear both at the beginning and end of the year,	$57,703.23		
Sundry balances used up, ...	10,508.79		
Loss from change of special investment,	3,848.00		
		72,060.02	
			$247,808.71

Net decrease of Funds and balances as above, . . .	$72,060.02
Less increase as above, ...	42,586.70
Leaving amount of the net decrease of the Funds and balances, excluding gifts for capital account, as is also shown in the following table, ...	$29,473.32

Funds during the year ending July 31, 1890.

Decrease of Funds, which appear both at the beginning and the end of the year, being the excess of payments over income received (including gifts for immediate use) for the special objects of those Funds.

UNIVERSITY.

John Parker Fellowships,	14.28	
John Thornton Kirkland Fellowship,	466.14	
Lectures on Political Economy Fund,	76.83	$557.25

COLLEGE.

Farrar Scholarship,	11.21	
Price Greenleaf Aid,	1,456.01	
Boylston Prizes for Elocution,	51.92	
Botanical Building Fund,	475.47	
Henry Flynt's Bequest,	.55	
Bowditch Scholarships,	89.96	
Bright "	15.00	
Class of 1814 "	4.27	
Gorham Thomas "	.52	
Walcott "	2.84	
Exhibitions,	37.07	
Palfrey Exhibition,	1.23	
Quincy Tufts Fund,	13.30	
Day Fund,	4.57	
Munroe Fund,	7.08	
Hopkins Gift for "Deturs,"	10.55	
Botanic Department,	681.58	
Carey Building Fund,	26,618.50	
Building Fund for addition to Museum,	7,705.66	
Sundry gifts (unexpended balances),	248.96	37,436.25

LIBRARY.

Constantius Fund,	81.38	
Waterston "	178.46	
Farrar "	111.80	
Hayward "	23.54	
Lane "	57.35	
Mary Osgood "	126.61	
Salisbury "	2.38	
Denny "	44.49	
Wales "	221.21	
Walker "	72.12	
Sundry gifts (unexpended balances),	52.94	972.28
Amount carried forward,		$38,965.78

Funds during the year ending July 31, 1890. (Continued.)

DECREASE.

Amount brought forward, . . .		$38,965.78

DIVINITY SCHOOL.

General Fund, ...	1,628.66	
Thomas Cary Scholarships, ...	4.23	
Nancy Kendall "	26.65	1,659.54

MEDICAL SCHOOL.

Boylston Fund for Medical Prizes, ...	298.67	
Medical Library Fund, ...	51.13	
Foster income for Medical Students, ...	27.53	377.33

OBSERVATORY.

Uriah A. Boyden Fund, ...	2,160.83	
Josiah Quincy Fund, ...	424.69	
Bruce Fund, ...	6,451.36	9,036.88

FUNDS FOR SPECIAL PURPOSES.

Walter Hastings Building Fund, ...	63,462.59	
Lucy Osgood Annuity Fund, ...	163.47	
Gray Fund for Engravings, ...	27.20	
Bemis Annuity Fund, ...	56.82	
Sarah Winslow "	7.93	63,718.01
		$118,757.54

Sundry balances used up.		
S. Johnston bequest for gate-way, ...	10,162.50	
Observatory account (balance), ...	346.29	10,508.79
Price Greenleaf Fund, loss from change of special investment, ...		3,848.00
Amount carried forward, ...		$133,114.33

Funds during the year ending July 31, 1890. (Continued.)

DECREASE.

Amount brought forward, ...	$128,114.88
Amount carried forward, ...	$128,114.88

Funds during the year ending July 31, 1890. (Continued.)

DECREASE.

Amount brought forward, ...	$128,114.83
Total, ...	$128,114.83

TABLE I., CONTINUED.

RECEIPTS.

Amount brought forward, . . .	$47,682.54	
George B. Sohier Prize, ...	148.20	
John O. Sargent Prize, ...	4.40	
Retiring Allowance, ...	7,184.93	
Lectures on Political Economy, ...	323.17	55,343.24
From **John O. Sargent**, gift for prize, ...	100.00	
Andrew P. Peabody, gift for prizes, ...	200.00	
George B. Sohier, gift for prize, ...	250.00	550.00
Balance remaining after dividing the net income among the Funds, ...	453.08	
Use of house by College officer, ...	400.00	
For care of the **Sarah Winslow** Fund, ...	6.13	
Sale of Anniversary volume, ...	7.25	
" Catalogues, Calendars, and Directories, . . .	840.24	1,706.70
		$57,599.94

PAYMENTS.

Overseers' Expenses.		
Advertising, postage, &c., ...	$272.20	
Printing President's Annual Report, ...	936.92	
Printing Treasurer's " "	221.08	
Printing other reports, and auditing Treasurer's accounts, ...	360.50	1,790.70
Office Expenses.		
President's, ...	874.01	
Treasurer's, ...	896.05	
Bursar's, ...	1,864.29	
Supt. of Buildings and Janitors, ...	85.70	
Corporation Rooms (fuel, rent, furniture, &c.), .	2,681.24	6,401.29
Salaries.		
President, ...	8,007.51	
Treasurer and Deputy Treasurer, ...	5,000.00	
Secretary and Asst. Secretary of the University,	3,150.00	
Secretary of the Board of Overseers, ...	200.00	
Bursar, ...	3,000.00	
Bursar's Assistant, ...	1,000.00	
Clerks Treasurer's office, ...	3,800.00	
Superintendent of Buildings, ...	2,400.00	26,557.51
University Lecturers, ...		500.00
Memorial Hall and Sanders Theatre.		
Insurance, ...	98.97	
Repairs, fuel, gas, &c., ...	612.92	711.89
General Expenses.		
Advertising, ...	217.22	
Labor, &c. on grounds outside of College Yard,	3,386.03	
Subscription to Mercantile Agency, ...	300.00	
Amounts carried forward, . . .	$3,903.25	$35,961.39

TABLE II., CONTINUED.

RECEIPTS.

Amounts brought forward,		$6,744.82	$244,485.57
Bright, ½ income of **Bright** Legacy,		1,235.00	
Browne (accumulating),		164.95	
Ruluff Sterling Choate,		303.37	
Class of 1802,		362.60	
" **1814**,		145.73	
" **1815 (Kirkland)**,		268.14	
" **1817**		191.47	
" **1828** (accumulating),		149.73	
" **1835** (accumulating),		148.64	
" **1841**,		202.19	
" **1852 (Dana)** (accumulating),		211.53	
" **1856**, from special investment,		600.00	
" **1867** (accumulating),		144.69	
Crowninshield (accumulating),		470.14	
George and **Martha Derby**,		265.87	
Wm. Samuel Eliot,		264.24	
Farrar,		288.79	
Richard Augustine Gambrill,		61.75	
Charles Haven Goodwin,		800.00	
Greene (accumulating),		150.92	
Price Greenleaf,		3,000.00	
Levina Hoar (Town of Lincoln),		285.04	
Hodges (accumulating),		451.17	
Hollis,		260.83	
William Merrick,		252.43	
Morey,		370.30	
Pennoyer. Interest,	$110.26		
Annuity,	245.52	355.78	
Perkins (accumulating),		152.79	
Rodger (accumulating)		40.76	
Henry Bromfield Rogers,		162.03	
Edward Russell (accumulating),		137.13	
Mary & Leverett Saltonstall (accumulating),		272.49	
Derothy Saltonstall (accumulating),		45.00	
Savage,		300.00	
Sever,		157.29	
Sewall,		478.29	
Shattuck,		2,283.27	
Slade,		278.02	
Story (accumulating),		157.43	
Stoughton (accumulating),		55.03	
Gorham Thomas,		199.48	
Toppan,		341.95	
Townsend,		1,208.18	
Walcott,		197.16	
Whiting,		508.88	24,620.30
Amount carried forward,			$269,105.87

TABLE II., CONTINUED.

RECEIPTS.

Amount brought forward, . . .		$328,088.11
Income of **Jonathan Phillips** unrestricted Fund,	$1,556.10	
" " **John A. Blanchard** " "	51.87	
" " **Daniel H. Pierce** " "	661.02	
" " **J. W. P. Abbot** (accumulating),	241.02	
" " Scholarship and Beneficiary money returned, ...	57.11	
" " **John E. Thayer** Fund, ...	758.24	
" " Fund for Religious Services, ...	47.18	
" " **Gurney** Fund, ...	8,715.74	
" " Classical Publication Fund of the **Class of 1856**, ...	312.85	
" " **Increase Sumner Wheeler** Fund, . . .	2,470.00	14,871.13
Hemenway Gymnasium.		
For use of lockers, ...	2,376.00	
For use of, by other departments, ...	1,692.65	4,068.65
Jefferson Physical Laboratory.		
Income from Endowment, ...	3,705.00	
Interest on unexpended balance, ...	16.94	3,721.94
Carey Building Fund.		
Additional gift from **Henry Astor Carey**, . .	11,000.00	
Interest on unexpended balance, ...	776.62	11,776.62
Samuel Johnston bequest for gate-way.		
Gift from **Theodore Lyman**, ...	1,266.03	
Anonymous gift for special use, ...	20.00	
Interest on Fund, ...	77.02	1,363.05
Building Fund for Professor **Cooke's** addition to the University Museum.		
Subscriptions received, ...	21,500.00	
Interest on unexpended balance, ...	246.96	21,746.96
Subscription for Sanskrit Department, ...		750.00
Botanic Garden.		
Income of Fund, ...	2,113.38	
" " the **Lowell** Fund, ...	2,775.00	
" from **John L. Russell** Fund, ...	20.91	
Gifts for present use, ...	1,700.00	
Rent of house, ...	700.00	7,309.29
Botanical Building Fund.		
Subscriptions received, ...	23,100.00	
Interest on unexpended balance, ...	126.29	23,226.29
Herbarium. Income of Fund, ...	935.29	
Gifts for present use, ...	4,416.75	
Received from Professor **Gray's** copyrights, .	2,382.05	
Income from **John L. Russell** Fund, ...	62.75	
Sale of duplicate books, ...	15.00	7,811.84
Amount carried forward, . . .		$424,733.88

Table II., continued.

PAYMENTS.

Amount brought forward, . . .		$20,070.00	
Pennoyer, ...		350.00	
Henry Bromfield Rogers, ...		150.00	
Savage, ...		300.00	
Sever, ...		150.00	
Sewall, ...		400.00	
Shattuck, ...		2,050.00	
Slade, ...		166.66	
Thayer, ...		3,266.67	
Gorham Thomas, ...		200.00	
Toppan, ...		300.00	
Townsend, ...		1,200.00	
Walcott, ...		200.00	
Whiting, ...		500.00	$29,303.33
Paid other Beneficiaries from the following Funds.			
Exhibitions, ...		524.70	
Palfrey Exhibition, ...		90.00	
Samuel Ward, ...		50.00	
Quincy Tufts, ...		556.60	
Day Fund, ...		270.00	
Munroe Fund, ...		520.00	
Price Greenleaf Aid, ...		17,088.34	19,099.64
Prizes. **Boylston** Prizes for Elocution, ...		255.00	
Bowdoin Prizes for Dissertations, ...		350.00	
"Deturs" from **Hopkins** Fund, ...		284.12	889.12
Hemenway Gymnasium.			
Salaries and wages, ...		5,725.00	
Janitors and cleaning, ...		1,228.49	
Gas, water, fuel, and sundries, ...		1,527.67	
Repairs and improvements, ...		1,217.26	
Apparatus, ...		447.63	10,146.05
Jefferson Physical Laboratory.			
Spent on building and fixtures, ...		1,010.38	
Laboratory expenses, ...	$3,259.77		
Less part paid by the College, . . .	600.00	2,659.77	3,670.15
John E. Thayer Fund.			
Expenses of Quarterly Journal of Economics, . .			688.97
Classical Publication Fund of the **Class of 1856**.			
Printing Studies in Classical Philology, ...			300.00
Subscription for Sanskrit Department.			
Printing Harvard Oriental Series, ...			365.25
Carey Building Fund.			
Paid on account of construction, &c., ...			38,395.12
Building Fund for Professor **Cooke's** addition to the University Museum.			
Paid on account of construction, &c., ...			38,052.62
Amount carried forward, ...			$140,910.25

TABLE II., CONTINUED.

PAYMENTS.

Amount brought forward, ...			$140,910.25
Samuel Johnston bequest for gate-way, ...			11,525.55
Salaries for instruction, ...			183,366.56
Payments for College Edifices not valued on Treasurer's books.			
Repairs and improvements, &c., ...		$8,798.57	
Insurance, ...		2,030.84	10,829.41
Botanic Garden, for labor, repairs, materials, &c., . . .			7,990.87
Botanical Building Fund.			
Paid on account of construction, &c., ...			15,101.76
Herbarium, for salaries, labor, repairs, materials, &c., .		2,548.60	
Purchase of the **James** Herbarium of Mosses, .		500.00	3,048.60
Paid from gifts for Books for Political Economy Dept.,		96.66	
" " " " American History "		117.40	
" " " " French "		5.33	
" " " " Mathematical "		19.36	
" " " " German "		481.03	
" " " " Social Questions,		394.95	1,114.73
gift of **N. C. Nash** for Greek Department, .			500.00
General Expenses.			
Appropriations for collections and laboratories.			
Physical Apparatus (Prof. Trowbridge),	1,000.00		
Mineralogy and Chemistry (Prof. Cooke),	800.00		
Botany (Prof. Goodale), ...	250.00		
Botany (Prof. Farlow), ...	200.00		
Geology (Prof. Shaler), ...	250.00		
Zoölogy (Prof. Mark), ...	250.00		
Psychology (Prof. James), ...	200.00		
Fine Arts (Prof. Norton), ...	200.00		
Geography (Asst. Prof. Davis), ...	100.00		
Petrography (Instructor Wolff), ...	25.00		
Drawing (Instructor Moore), ...	150.00		
Laboratory fees appropriated, ...	8,932.32		
Fuel and service in Nat. Hist. Labor's,	1,500.00		
Furniture and fittings for the Geological Section of the Museum, ...	1,500.00		
Furniture and fittings for Department of Cryptogamic Botany, ...	500.00	15,857.32	
Jefferson Physical Laboratory.			
Expenses paid by the College, ...		600.00	
Appleton Chapel.			
Preaching and morning services, .	3,245.00		
Organist and Choir-master, ...	1,300.00		
Choir, ...	1,400.00		
Books, hymnals, and music, ...	227.33		
Fuel, gas, cleaning, &c., ...	1,139.17		
Services and wages, ...	155.75	7,467.25	
Amounts carried forward, ...		$23,924.57	$374,387.73

TABLE II., CONTINUED.

PAYMENTS.

Amounts brought forward,	$23,924.57	$374,387.73
General Expenses.		
Admission examinations,	839.63	
Advertising,	291.50	
Books and binding,	47.44	
Cleaning and care of College buildings not valued on Treasurer's books,	10,053.84	
College Yard expenses, labor, material, &c.,	2,425.24	
Commencement Dinner,	552.20	
Dean and Chairman Parietal Committee, salaries, and office expenses,	5,358.21	
Fuel, &c.,	4,705.33	
Furniture,	1,193.96	
Freight, diplomas, and sundries,	816.60	
Gas,	2,370.76	
Music, Class-Day,	125.00	
Pews hired in Cambridge churches,	1,083.00	
Printing office, expenses,	11,518.38	
Services of examiners and proctors,	4,395.43	
" " assistants to instructors,	1,824.94	
" " undergraduates,	321.34	
Supplies, tools, and materials,	779.42	
Watchmen,	548.58	
Water rates,	565.85	
Clerical service for Chairman of Athletic Committee,	400.00	
Summer Schools of 1890 (part of),	395.00	
Collation,	54.25	
Printing,	188.53	74,779.00
Total payments,		$449,166.73

TABLE No. III.

THE LIBRARY.

RECEIPTS.

Income of the following Funds for the purchase of books.		
Subscription for Library,		$519.34
Nathaniel I. Bowditch,		104.09
Bright, ½ income of the **Bright** Legacy,	$1,235.00	
Interest on balance,	2.57	1,237.57
Constantius, ½ of income for the purchase of books,		644.33
Denny,		264.34
Eliza Farrar,		274.66
Horace A. Haven,		152.74
Francis B. Hayes,		493.01
George Hayward,		261.33
Amount carried forward,		$3,951.41

TABLE III., CONTINUED.

PAYMENTS.

Amount brought forward, ...	$4,038.87	
Homer Fund, ...	90.57	
Lane “	322.53	
Lowell “	575.55	
Minot “	4,195.49	
Lucy Osgood “	318.88	
Mary Osgood “	478.39	
Salisbury “	266.72	
Sever “	936.49	
Shapleigh “	178.67	
Sumner “	1,724.29	
Tucker “	159.93	
Wales “	441.81	
Walker “	862.96	
Ward “	243.59	
Waterston “	216.00	
Dante Society money, ...	57.42	
Duplicate money, ...	20.17	
Subscription of 1880, ...	9.29	
History XIII., ...	.21	$15,137.83
Salaries and wages, ...	21,256.37	
Binding, ...	1,299.80	
Stationery, postage, &c., ...	467.78	
Fuel, ...	1,071.82	
Repairs and improvements, ...	1,831.02	
Freight, water and sundries, ...	653.59	
Janitors and cleaning, ...	868.61	
Furniture, ...	335.88	
Bulletins, and other printing, ...	2,078.53	
Legal services, ...	54.41	29,917.81
		$45,055.64

TABLE No. IV.

DIVINITY SCHOOL.

RECEIPTS.

Income of the following Funds applicable to Salaries.

General Fund, ...	$1,434.18
Benjamin Bussey Professorship, ...	1,856.65
Parkman Professorship, ...	791.19
John Hancock Professorship, ...	296.80
Winn Professorship of Ecclesiastical History, .	2,363.59
Samuel Dexter, ...	1,001.83
Henry Lienow, ...	453.74
Mary P. Townsend, ...	259.35
Amount carried forward, ...	$8,457.33

TABLE IV., CONTINUED.

PAYMENTS.

Amount brought forward,	$25,140.59	
Printing,	133.88	
Fuel, gas, and water,	1,060.51	
Stationery, postage, diplomas, and sundries,	332.63	
Collation,	75.00	
Furniture,	156.00	
Insurance,	50.00	
Proportion of expenses of Gymnasium,	167.35	
Advertising,	182.84	$27,298.80
Paid the incumbents of the following Scholarships.		
Jackson Foundation,	533.32	
Thomas Cary,	258.34	
George Chapman,	100.00	
Joshua Clapp,	125.00	
Nancy Kendall,	186.66	
J. Henry Kendall,	140.00	1,343.32
Paid beneficiaries from the following Funds:		
Abner W. Buttrick,	550.00	
William Pomroy,	53.65	603.65
		$29,245.77

TABLE NO. V.

LAW SCHOOL.

RECEIPTS.

Income of the following Funds.		
Law School, balance,	$1,004.75	
Nathan Dane Professorship,	778.05	
Benjamin Bussey "	1,184.61	
Isaac Royall "	412.05	
New Professorship,	4,692.75	
Law School Book Fund,	1,962.66	
Benjamin Bussey Trust (½ of net income for use of this School),	4,436.53	$14,471.40
Term Bills.		
For instruction,		36,465.00
Gift from Harvard Law School Association to increase the instruction in Constitutional Law,	500.00	
Anonymous gift for instruction in the Peculiarities of Massachusetts Law,	1,000.00	1,500.00
Sale of Catalogues,		18.15
		$52,454.55

PAYMENTS.

For Salaries for instruction,	$26,000.00
Librarian and Assistants,	3,915.33
Janitors, cleaning, &c.,	1,056.67
Amount carried forward,	$30,972.00

TABLE VI., CONTINUED.

RECEIPTS.

Amount brought forward,		$48,361.01
Term Bills.		
For instruction,	$54,212.00	
For graduation fees,	2,250.00	
In Chemical Laboratory, breakage and chemicals,	943.62	
In Practical Anatomy, for use of material,	612.00	
For extra examination fees,	131.00	58,148.62
From Dental and Veterinary Schools for Laboratory instruction,		290.00
Repayment of advances for the purchase of microscopes,		40.00
Use of lecture room by Medical Society,		30.00
		$106,869.68

PAYMENTS.

Boylston Medical Prizes.			
Prizes,		$400.00	
Advertising,		77.50	$477.50
Warren Anatomical Museum.			
Expenses and additions to collection,			374.93
Edward M. Barringer Scholarship No. 1,	$300.00		
" " 2,	200.00	500.00	
David Williams Cheever Scholarship,		200.00	
Faculty Scholarships,		800.00	
Beneficiaries from **Foster** income,		195.00	1,695.00
Chemical Laboratory,		1,449.04	
Physiological Laboratory,		400.00	
Anatomy,		1,750.00	
Pathological Laboratory,		100.00	
Bacteriological Laboratory,		200.00	
Obstetrics,		300.00	
Histology and Embryology,		200.00	
Materia Medica,		50.00	
Bandaging and apparatus,		167.75	
Model, Surgical landmarks,		15.00	
Hygiene,		50.00	
Salaries for instruction,		47,200.00	
Repairs and improvements,		2,034.77	
Microscopes,		305.00	54,221.56
Henry F. Sears' gift for new addition.			
Paid on account of construction, &c.,			9,050.00
Graduates courses, fees repaid to Instructors,		1,190.00	
Summer " " " " "		1,245.00	2,435.00
General Expenses.			
Advertising and catalogues,		1,010.00	
Books, from Library Fund,		153.78	
Fuel,		1,576.39	
Gas,		843.44	
Amounts carried forward,		$3,583.61	$68,253.99

TABLE NO. VIII.

LAWRENCE SCIENTIFIC SCHOOL, AND MUSEUM OF COMPARATIVE ZOÖLOGY.

RECEIPTS.

Income of the following Funds.			
Lawrence Scientific School, balance		$59.87	
Professorship of Engineering,		1,917.07	
Abbott Lawrence,		3,039.88	
James Lawrence,		2,488.53	
John B. Barringer,		1,515.94	
Gray Fund for Zoölogical Museum,		2,470.00	
Sturgis Hooper,		4,940.00	
Agassiz Memorial. Interest,	$13,734.39		
From special investment,	995.45	14,729.84	
Teachers and Pupils,		375.14	
Humboldt,		382.41	
Permanent Fund for Museum of Zoölogy,		5,802.97	$37,721.65
Term Bills, for instruction,			9,995.20
			$47,716.85

PAYMENTS.

Paid on the order of the Faculty of the Museum of Comparative Zoölogy, from the following Funds.			
Gray,		$2,470.00	
Agassiz Memorial, general expenses,		11,361.01	
Agassiz Memorial, advances repaid,		3,368.83	
Teachers and Pupils,		375.14	
Humboldt,		382.41	
Permanent,		5,802.97	
Sturgis Hooper.			
Professor of Geology,	$4,500.00		
Expenses in Geology,	110.00	4,610.00	$28,370.36
Salaries for instruction,		11,901.22	
Instruments and apparatus,		14.51	
Books, Engineering Department,		100.00	
Books and binding,		151.16	
Printing,		75.50	
Fuel,		346.44	
Gas, water, freight, and sundries,		42.81	
Janitor and cleaning,		332.00	
Labor and repairs,		115.02	
Expenses Chemical Laboratory (part of),		15.94	
Scholarships,		1,500.00	
Proportion of expenses of Gymnasium,		310.80	
Furniture,		57.78	14,963.18
			$43,333.54

TABLE IX., CONTINUED.

PAYMENTS.

Amounts brought forward,	$22,176.53	$32,296.61
Interest on advances,	80.84	
On account of advances to Observatory real estate repaid,	419.16	
Supplies and materials,	445.58	
Rent of house,	90.00	23,212.11
		$55,508.72

TABLE No. X.

BUSSEY INSTITUTION.

RECEIPTS.

Interest on unexpended balance,	$317.84	
From **Bussey** Trust (½ net income),	8,873.06	
From **Bussey** Building Fund,	30.08	
Fees for instruction,	230.00	
Sale of wood, hay, and sundries,	1,274.58	
Horticultural Department, sale of flowers and plants for botanical purposes, &c.,	551.00	
Board of horses, cattle, &c.,	1,249.05	$12,525.61

PAYMENTS.

For Salaries,	5,500.00	
Books,	14.27	
Fuel for school building,	59.38	
Services and wages,	1,820.69	
Horticultural Department, expenses,	1,008.36	
Repairs and improvements,	727.26	
Grain,	312.98	
Advertising,	52.68	
Horse shoeing,	92.05	
Seeds,	29.83	
Farming tools,	190.26	
Freight, telegrams, weighing hay, &c.,	199.71	
Insurance,	45.00	$10,052.47

James Arnold Fund.

Receipts.

Income of Fund,	$7,630.77

Payments.

19/20 of income carried to Arnold Arboretum,	$7,249.23

TABLE XI., CONTINUED.

Gray Fund for Engravings.

Receipts.

Interest on Fund,	$790.25

Payments.

To the Treasurer of the Museum of Fine Arts,	$817.45

Annuity Funds.

Receipts.

Gore, interest,	$1,172.95	
Lucy Osgood, interest,	256.53	
Bemis, interest,	2,508.78	$3,938.26

Payments.

Gore, annuities,	$600.00	
Lucy Osgood, annuity,	420.00	
Bemis, annuity,	2,565.60	$3,585.60

Price Greenleaf Fund.

Receipts.

Income of special investment,		$34,264.67

Payments.

Scholarships,	$3,000.00	
Beneficiary money transferred to College account,	15,632.33	
Balance of income for Library expenses,	15,632.34	$34,264.67

Daniel Williams Fund.

Receipts.

Interest on Fund,		$787.68

Payments.

Treasurer of Herring Pond Indians,	$66.48	
" " Mashpee Indians,	540.03	$606.51

Sarah Winslow Fund.

Receipts.

Interest on Fund,		$237.66

Payments.

Minister at Tyngsborough, Mass.,	$119.73	
Teacher at " "	119.73	
Commission on income credited to University,	6.13	$245.59

GENERAL SUMMARY OF THE TABLES.

		Receipts.	Payments.
Table I.	University,	$57,599.94	$66,019.49
Table II.	College,	451,794.11	449,166.78
Table III.	Library,	38,926.97	45,055.64
Table IV.	Divinity School,	28,674.23	29,245.77
Table V.	Law School,	52,454.55	40,260.62
Table VI.	Medical School,	106,869.63	79,379.84
Table VII.	Dental School,	10,309.15	7,973.77
Table VIII.	Lawrence Scientific School and Museum of Comparative Zoölogy,	47,716.85	43,338.54
Table IX.	Observatory,	46,615.63	55,508.72
Table X.	Bussey Institution,	12,525.61	10,052.47
	James Arnold Fund,	7,630.77	7,249.23
	Arnold Arboretum,	9,399.58	7,930.05
	School of Veterinary Medicine,	19,698.45	19,310.10
Table XI.	Bussey Trust,	24,046.12	24,046.12
	Gray Fund for Engravings,	790.25	817.45
	Annuity Funds,	3,938.26	3,585.60
	Price Greenleaf Fund,	34,264.67	34,264.67
	Daniel Williams Fund,	787.68	606.51
	Sarah Winslow Fund,	237.66	245.59
	Fund for Semitic Collection,	10,789.11	1,366.97
	Walter Hastings Building Fund,	36,443.56	99,906.15
	Class Funds,	145.00	145.00
	Sundry Accounts,	1,911.68	7,572.75
		$1,003,569.46	$1,033,042.78
			1,003,569.46
	Balance,		$29,473.32

Which is the net decrease of the Funds and balances, excluding gifts for capital account, as also shown on page 33.

ASTOR LIBRARY
NY
CANCELLED

ANNUAL REPORTS

OF THE

RESIDENT AND TREASURER

OF

HARVARD COLLEGE.

1890-91.

CANCELLED

CAMBRIDGE, MASS.
PUBLISHED BY THE UNIVERSITY.
1892.

PRESIDENT'S REPORT FOR 1890-91.

To the Board of Overseers: —

The President of the University has the honor to submit the following Report for the academic year 1890–91; namely, from Sept. 25th, 1890, to Oct. 1st, 1891: —

James Russell Lowell, Smith Professor of the French and Spanish Languages and Literatures, and Professor of Belles Lettres, *Emeritus*, and a member of the Board of Overseers, died in Cambridge, on the 13th of August, 1891, in the seventy-third year of his age. Mr. Lowell was chosen Smith Professor in 1855, and entered upon the duties of his office in 1857 — the third incumbent of the chair already made illustrious by Ticknor and Longfellow. He discharged the duties of his professorship with unfailing assiduity for twenty years, with the exception of a period of two years which he spent in Europe. His literary sympathies were wide, and his knowledge of books extensive and thorough; yet scholarship was not his chief characteristic, but rather wisdom. Himself a poet and a prose writer of great distinction, he was also an admirable critic of both prose and verse. From 1877 to 1885 he was absent in Europe on the public service; but on his return he resumed the duties of his chair for a few months. In 1886 he resigned his professorship and was made Professor, *Emeritus*. On two memorable occasions in the history of the College Mr. Lowell had the chief part. The first was the Commemoration Day in June, 1865, at the close of the Civil War, when Mr. Lowell read his commemoration ode, the most exalted and fervent patriotic poem which America has produced. The second was the celebration of the two hundred and fiftieth anniversary of the College, when he made the principal address, — an address worthy of a great occasion. In 1887 he was elected by the alumni to the Board of Overseers.

Mr. Lowell inherited from his father and his grandfather a strong affection for Harvard College. Whenever he had years of rapid change and growth, as appears very plainly in the series of clear, accurate, and full reports on Harvard College which he contributed to the President's annual reports. Through all these changes, some of which gave rise to long discussions and wide differences of opinion, Professor Smith possessed the confidence of the whole Faculty. On retiring from the office of Dean, after this long and honorable service, he resumed the full duties of his professorship of Latin.

Winfield Scott Chaplin, Professor of Engineering and Dean of the Lawrence Scientific School, resigned his office after a service of six years to accept the Chancellorship of the Washington University at St. Louis. During Professor Chaplin's short term of service the number of students in the Scientific School rose from fourteen to eighty-eight, a growth which has been continued during the current year. New life was infused into every department of the School and it started on a new career of usefulness. Professor Chaplin was also Chairman of the Parietal Committee, and in that capacity he wrought considerable improvements in the discipline of the Cambridge departments of the University. His vigor, moderation, good sense, and good humor gave him a strong and wholesome influence with the students and with his colleagues, and his departure from the University was univerally regretted, although his promotion to an honorable and responsible position gave general satisfaction.

Adolphe Cohn, Assistant Professor of French, resigned his position to accept a full professorship in Columbia College. Professor Cohn came hither from Columbia College as an instructor in 1884. In 1885 he was made Assistant Professor, and this appointment was renewed in 1890. His return to Columbia College to a congenial professorship of the Romance Languages and Literatures was a deserved promotion.

Two members of the Board of Preachers for the year 1890–91 retired at the end of the year, namely, Rev. Phillips Brooks, D.D., and Rev. William Lawrence, D.D. Dr. Brooks had served the University in this capacity with unflagging devotion for ten consecutive years, — ever since the retirement of Rev. Andrew P. Peabody, D.D., from the Plummer Professorship. His fervor, eloquence, and breadth of view have done much to

man and Regent. The duties of this office are in part those
etofore performed by the Chairman of the Parietal Commit-
The Regent will select and supervise the proctors who
de in College buildings, or in buildings to which the super-
ndence of the College extends. He is expected to keep
self informed of the condition and management of all such
ldings, whether belonging to the University or to private
ividuals, his watchfulness extending to their sanitary condi-
as well as to the order preserved in them. He is to take
nizance also of all cases of serious sickness among the stu-
ts, to the end that suitable medical attendance and nursing
be provided in due season, in all cases, whether the patient
poor or not, and that cases of contagious diseases may be
er removed or properly isolated. He may also exercise
e salutary influence over students' societies. The Regent
University officer, and is not subject to the authority of
one Faculty. Whenever in the discharge of his duties
needs the support of any Faculty, he is expected to com-
nicate with the Dean of that Faculty.

n 1889–90, namely, on the 26th of March, 1890, the Faculty
Harvard College sent to the President and Fellows certain
posed modifications of its regulations, intended to encourage
anticipation of College studies by students at the time of
r admission, and to facilitate the attainment of the degree
Bachelor of Arts in less than four years.*

The communication from the College Faculty was as follows: —
HE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:
e Faculty of Harvard College received on Dec. 6, 1887, the following com-
ication from the Academic Council: —
Voted, that with a view to lower the average age at which Bachelors of Arts
arvard College can enter the professional schools and the graduate depart-
t, the College Faculty be requested to consider the expediency of a reduction
e College course."
the consideration of this difficult subject the Faculty has given much time,
cially since Nov. 12, 1889, and now begs to lay before the President and
ws the result of its deliberations.
e Faculty desires to modify its present regulations in accordance with the
wing propositions: —
That the requirements for the degree of Bachelor of Arts be expressed, un-
suitable regulations with regard to length of residence and distribution of
, in terms of courses of study satisfactorily accomplished.

and another expressing the views of the minority. It appeared from these statements that the Faculty was then more evenly divided on this important subject than it had been in March, 1890. The vote whereby the proposals to facilitate the attainment of the degree of Bachelor of Arts in less than four years were originally adopted was a vote of 34 to 22. In January, 1891, three members of the Faculty, who had not taken part in the action of the Faculty in the preceding March, joined the minority, and three new members of the Faculty took the same course. The minority was thereby increased to 28 members. The Committee of the Board of Overseers subsequently prepared a supplementary report commenting upon the two statements received from the Faculty, and both their reports, together with the statements proceeding from the Faculty, were given to the public press. Finally, at their meeting of April 8th, 1891, the Board of Overseers refused its consent to the first, second, and fourth proposals of the College Faculty, and consented to the third with a slight modification necessitated by their rejection of the second proposal of the Faculty. During the year from April, 1890, to April, 1891, while the subject was in the hands of the Board of Overseers, the discussion was carried on through printed statements, in private conversation, and in the public press, very little time being given to it in any of the Academic Boards, including the Board of Overseers; but the final votes in that Board were passed by large majorities, and made it clear that measures on this subject must commend themselves to the judgment of a large majority of the teachers of the University, before they can be accepted by the Board of Overseers.

One significant fact was apparently agreed on by all parties to this prolonged discussion, namely, that any student of fair parts can get the degree of Bachelor of Arts at Harvard College in three years under the existing regulations without any unreasonable exertion, if he anticipates a subject or two at the admission examination, or makes good use of half of the summer vacation in each year.

The year under review afforded the first opportunity to observe the working of the new organization of the Department of Arts and Sciences under the statutes adopted in the year

The next interesting subject which engaged the attention of the Faculty was the organization of twelve standing committees of the Faculty, called Divisions. This subdivision of the large Faculty of Arts and Sciences into standing committees by subject of instruction recognizes, in the organization of the University, a tendency which has been distinctly seen for several years past — the tendency to associate for various administrative purposes the teachers of single or cognate subjects. whose common interest it is to develop their respective subjects to the highest possible degree, to seek better and better facilities for teaching them, and to attract as many competent students as possible to the study of them. Some of these Divisions of the Faculty by subject are already nearly as large as the whole College Faculty was thirty years ago. Thus, the Division of Modern Languages contains eighteen persons, and the Division of History and Political Science nine; and in each case there are associated with these members of the Faculty several instructors who are not members of the Faculty. The importance of this organization will be obvious when it is observed, that Harvard University has distinctly rejected, in its Department of Arts and Sciences, the policy of establishing distinct schools such as many other American universities have founded — as for example, a School of Finance, a School of Political Science, or a School of Philosophy. The University proposes to have but one comprehensive Faculty of Arts and Sciences, and to care for the interests of the separate departments of learning within this Faculty by means of this new organization of Divisions. The attention of the Overseers is especially invited to the discussion of this subject by the Dean of the Faculty of Arts and Sciences (pp. 43–47).

The Faculty gave attention, first through a large committee and then in its own body, to the arrangement of courses on methods of instruction, intended for teachers and persons who proposed to become teachers. The instruction which the Faculty finally decided to offer relates to the History of Teaching, the Theory and Art of Teaching, and the methods of elementary teaching in the following topics: Greek, Latin, English, German, French, History, Mathematics, Physics, Chemistry, Zoölogy, Botany, Geology, and Geography. proposed to provide full courses on the History and the Teaching, and a short course of lectures on each of the topics mentioned, and, in addition, a course of twelve on topics in Psychology of interest to teachers. On the mendation of the Faculty, the Corporation and Overs pointed an Assistant Professor of the History and the Teaching; and for the current year this Professor anr three systematic courses; first, on the History of Teach of Educational Theories, twice a week; second, on the of Teaching, once a week; third, on the Art of Te twice a week; each of the courses extending through year. Professor James gives the lectures on topics i chology, and these lectures have been attended by hundred teachers. Professor Greenough is giving a co teaching Latin; but this course is only open to students University and not to the public. The detailed stater courses on special topics will be found in the Append 209–213).

The Faculty, in common with most teachers in Engla the United States, feel but slight interest or confidence i is ordinarily called Pedagogy; but they believe that teachers should be able to give some account of their n for the benefit of those who are beginning to teach; other words, that experienced teachers can advanta convey to beginners some of the results of their expe The Faculty believe, however, that this work to be pr must be departmental; that the accomplished teacher o must show how to teach Latin; the accomplished tea Chemistry how to teach Chemistry, and so forth; or, at that there must be separate teaching of the several m applicable in the principal groups of subjects — Lang History, Science, and Mathematics.

After much discussion in the full Board the Faculty o and Sciences adopted a somewhat new arrangement College day, by which one hour was gained for lectures o day of the week. Beginning with the current year l are to be given from nine A.M. to one P.M. and from ha one to half-past four P.M. This arrangement gives seven r lectures in the day instead of six, and results in making urteen examination-groups instead of twelve. This change akes choice of study freer; because it makes it somewhat sier to avoid conflicts between one lecture and another, between one examination and another. It is, therefore, important improvement. It is found necessary, how- er, to use the later hours of the afternoon and even the ening hours for those courses of instruction which have but w students, and those chiefly advanced students. As the mber of subjects taught at the University increases, the mber of hours utilized for lectures in each day will doubtless crease, until the early morning hours and the late afternoon e all used. For the present it is possible for instructors to range with small classes hours of meeting which are not cluded in the regular tabular view.

In the hope to facilitate the prompt and orderly beginning work in all the regular courses at the opening of the College ar, the Faculty, in June, made several improvements in e processes of registration and of enrolment in the several urses. The prompt determination of the studies chosen by ch student being a very important element in the orderly ginning of work, provision was made that all instructors fering courses announced by the Faculty of Arts and Sciences r 1891–92 should be at specified lecture-rooms in or near the rd from nine to one on the first day of the academic year, d that a representative of each department offering courses ould be at a specified lecture-room from nine to one on the y before the term opened, for the purpose of advising students out the choice of their studies and their fitness for the par- ular courses which they desired to take. The Freshman dvisers and the members of the Committee on Special Stu- nts were also at the disposition of students on the day before e term opened, as in 1890. New aids for new-comers were ovided, — such as a map of the vicinity of the University, a rectory for important committees, departmental chairmen, d instructors, and lists of rooms which were to be let in the ighborhood of the College. Two or three voluntary organi- tions also offered their services to new-comers to help them obtaining rooms, furniture, and board, and in general to y the end of the year; 22 were transferred to some College lass, and there returned to College in the class of Special Students (1 October, 1891) only 58 persons. That a large roportion of these students passed but a short time at the University is, however, no proof that they do not profit by heir residence here. It is a main object of the statute which rovides for the attendance of students not candidates for a egree, to open the University to young men of serious purpose ho have but a short time to give to collegiate studies, or who esire to pursue for a year or two some special university study.

It appears from the Dean's report (p. 73) that hardly ore than one ninth of the candidates for admission to the ollege for examination take the entire examination in either une or September. Nearly eight-ninths divide the examinaion either between two years or between June and September f a single year. The latter practice is on the increase. There re no striking changes in regard to the use of the permitted ptions at the admission examination. The percentage of canidates who offer advanced Greek declines slowly, and the ercentage of candidates offering Trigonometry and Solid eometry increases slowly. As the Dean points out, the inreased load which every candidate must carry who abandons reek among the subjects for admission, is a heavy one (p. 73). here was a striking increase in the number of candidates at he preliminary examination in June, 1891; but the number of ilures at the examination was large. The practice of entering arvard College from other colleges is on the increase p. 77). In the summer of 1891, 73 graduates and underraduates of other colleges were admitted to Harvard College; nd in general these students who come from other colleges re earnest and vigorous young men. On account of the extrardinary variety in the standards and programmes of the merican colleges and universities, the Committee which has harge of the admission of students from other colleges has a sk of great difficulty, being obliged to examine minutely ach candidate's record at the schools and colleges which he as attended.

The examinations for admission to Harvard College and the cientific School are constantly extended to a larger and larger

Of those aided,		1886.	1887.	1888.	1889.	1890.	Totals for 5 years
there received $100 or less	during the 4 years	2	0	0	1	0	3
“ “ 200 and less than $300	“ “ “ “	0	1	0	0	0	1
“ “ 300 “ “ “ 400	“ “ “ “	3	3	1	0	1	8
“ “ 400 “ “ “ 500	“ “ “ “	5	1	1	1	7	15
“ “ 500 “ “ “ 600	“ “ “ “	4	2	1	0	1	8
“ “ 600 “ “ “ 700	“ “ “ “	1	4	0	0	8	13
“ “ 700 “ “ “ 800	“ “ “ “	5	5	2	3	6	21
“ “ 800 “ “ “ 900	“ “ “ “	1	5	1	1	3	11
“ “ 900 “ “ “ 1000	“ “ “ “	4	2	0	3	1	10
“ “ 1000 “ “ “ 1100	“ “ “ “	4	1	5	5	1	16
“ “ 1100 “ “ “ 1200	“ “ “ “	2	2	2	3	2	11
“ “ 1200 “ “ “ 1300	“ “ “ “	1	1	5	1	3	11
“ “ 1300 “ “ “ 1400	“ “ “ “	1	5	1	0	0	7
“ “ 1400 “ “ “ 1500	“ “ “ “	0	0	0	1	0	1
“ “ 1500 “ “ “ 1600	“ “ “ “	0	0	1	1	0	2

It appears from the first of these tables that nearly three sevenths of these high scholars in the five classes named received no aid; but that the proportion of unaided scholars varied considerably in the five classes, being highest in the class of 1890 and lowest in the class of 1888. If the inquiry had been confined to those students who graduated *summa cum laude*, the proportion of the students aided would have been larger. Of the high scholars aided in those five classes, one half received less than $800 in the four years, and only three received more than $1400 in four years. The amount of aid given is, therefore, far from being full support, it being remembered that every student who receives a scholarship has to pay from it the tuition fee of $150 a year.

The growth of the Lawrence Scientific School (p. 84) during the past six years has been remarkable. In 1885–86 there were 14 students in the School; during the year 1890–91 there were 88; and at the opening of the current year there were 118. Two new instructors were appointed in 1890–91 — one in Electrical Engineering and another in Astronomy — and a new course in Anatomy, Physiology, and Physical Training was planned, which is to be added in 1892–93 to the courses already given in the School.

There are several causes of the revival of the Scientific School. The first was the energy and the good judgment of questions, the Philosophy of Religion, Hebrew, and the History f Israel and of the Religion of Israel. On the other hand, he Divinity students attend many College courses, particularly hose on Languages and Philosophy. The larger part of the ourses in the Divinity School have been adopted by the Faculty of Arts and Sciences for the degree of Bachelor of Arts.

Nothing is now wanting to the establishment of the Divinity School on a genuine University basis, except the raising of its uition-fee to the level of the fee in all other Cambridge departments of the University, and the reduction of the amount of beneficiary aid given to each applicant. The Divinity School s the only department of the University which gives to every cceptable applicant for aid money enough to meet the small uition-fee — $50 — and to pay for board, lodging, fuel, light and washing. So long as this is the case, the School will not command he respect which the other professional schools of the University ommand, and it will not contend, as it might, against the common impression that members of the clerical profession are semi-pauperized, — in their early years by the habit of accepting omplete support during the long period of education, and in heir later by half-fares, free admissions, gratuitous services from physicians, special discounts from tradesmen, and spasmodic gifts from their churches instead of punctual payment. The great need of the clerical profession in the modern world is to get placed on the same self-respecting footing as regards ducation and compensation, as the medical profession or the profession of teaching. It should be said on the other hand hat the Harvard Divinity School is supposed to be the only heological school in the United States at which any tuition-fee t all is exacted.

The Law School has had an extraordinary growth during he past five years, a growth which is fully described in the ubjoined report of the Dean (pp. 104–117). This growth s of course very welcome; but it causes two serious mechanical difficulties in the administration of the School. Although Austin Hall is but eight years old, it is already too small. t could be conveniently enlarged by extending the main body of the building to the north, so as to gain another large lecture-room in the lower story, and a reading-room nearly as large as the present reading-room in the second story. This enlargement, however, cannot be made with any present resources of the School. The second difficulty is the consumption of valuable books, due simply to the incessant use of them by the numerous students. It is not a large proportion of the books of the library which are being destroyed; but it is the books most referred to by the teachers, which are presumably the most valuable books for present use in teaching. These are the ones which are being destroyed, in spite of a considerable provision of duplicates. There are two means of meeting this difficulty. The first is by providing collections of cases, prepared by the professors, and published in the ordinary manner. The other is by reprinting those portions of volumes of reports and other books which are destroyed by attrition. It is necessary to keep the library good at whatever cost; for it is the principal means of instruction. It must be confessed that the standard of the School is high in regard to the comfort and convenience of its students and their free access to books; but these are characteristic merits of the School, and must be maintained in spite of the rapid increase in the number of students.

The Faculty has already adopted two measures which will probably tend to diminish, temporarily at least, the number of students. The first of these measures is the regulation that no student, whether a candidate for a degree or a special student, who fails to pass an examination in at least three subjects, either at the regular examinations held at the end of his first year in the School, or at the examinations held in the following September, will be allowed, unless by vote of the Faculty, to continue in the School. It will be perceived that this regulation applies to regular students as well as to special. Secondly, at the beginning of the academic year 1893–94, and thereafter, all persons, who shall not be entitled to be admitted to the School without examination as candidates for the degree, will be required as a condition of being admitted to the School to pass satisfactory examinations in Latin, French (or some other modern language) and Blackstone's Commentaries, and this examination will apply to special students as well as to candidates for a degree. The existing examination for a degree demands only Latin, or some other foreign language, with Blackstone's Commentaries; and special students are not subject to any examination.

The most important event at the Medical School during the year under review was the decision of the Faculty to establish a single four-years' graded course of instruction, to go into effect in September, 1892. For thirteen years past the Faculty has been offering an optional four-years' course as well as a required three-years' course, and during this experience they have developed systematic clinical instruction to an amount which will more than fill a required course of four years. The present elective element in the last year of the course is therefore not likely to be destroyed. As the Dean of the School points out (p. 117), the Faculty is well aware that the number of students may be diminished by this requirement of an additional year to be spent in medical study; but the improvement of medical education is with them so great an object that they are ready to risk a reduction in the income of the School.

The establishment of three fellowships for encouraging original research in medicine, through the generosity of Mr. William Story Bullard, is another interesting event in the history of the School, particularly as the three fellowships bear the names of three eminent practitioners of medicine, who are thus appropriately commemorated in the community which they served long and faithfully.

The Summer courses and the graduate courses maintained by the Medical School are increasing steadily in the number of courses taken, in the number of students, and in the receipts from fees. This growth is exhibited in table V. appended to the Dean's report (p. 128).

The Dental School had an unusually large first-year class in the year under review. It was surmised that this might be due to the fact that in 1891 the admission examination was to be increased and a three-years' graded course put into the hot-houses, and in raising plants for exhibition and for the supply of flowers out of season to the classes in Botany at Cambridge.

Provision was made during the year 1890–91 for a considerable increase of instruction at the Veterinary School. The subjects of Cattle Practice and of Warranty and Evidence were added to the course of study, and arrangements were made to increase considerably in 1891–92 the instruction in clinical medicine. There are now seven Veterinarians attached to the School, in addition to the teachers of the Medical School who give instruction to students of Veterinary Medicine.

The Dean points out in his report (p. 137) that the three-years' graded course, which was originally adopted in this School, has been since established in three other American universities, and will in no long time suppress the two-years' course which has heretofore been common in private veterinary schools, — a year meaning in this case only four or five months.

There is no doubt that the Veterinary Hospital and Forge can be self-supporting, if gratuitous advice and treatment for sick and wounded animals be closely limited (see p. 137); but from the point of view of the Veterinary School this limitation is of course undesirable.

The Veterinary establishment as a whole greatly needs endowment for two purposes: First, to obtain a much larger hospital, and secondly, to provide more salaries and larger salaries for instructors, and particularly for clinical instructors. This object ought to be an attractive one for persons who are fond of animals, or who perceive how closely the health and safety of human beings is bound up with the welfare of the domestic animals.

An important event in the history of the Library during the year under review was the completion of an index to the subject-catalogue, which is the most complete list of topics ever printed, including about fifteen thousand topics without counting the seven thousand cross references. While preparing this index, Assistant Librarian W. C. Lane, who has worked on the catalogue since 1882 and on the index since 1886, has greatly improved the catalogue itself.

to $24,961.65; but it is still chargeable with an annuity of $600. The total cost of the constructions urgently needed cannot be safely estimated at less than $150,000.

The acquisitions to the Herbarium during the year were large, the total number of specimens received being about 13,000, and the number of specimens mounted and distributed 10,995.

In consequence of injury to the health of one of the botanists working in the Herbarium, apparently due to arsenical poisoning, the method of poisoning the plants with arsenic acid, which has been used for several years past, has been abandoned, and no other method has yet been adopted.

The employment at the Herbarium of Professor Barnes, of the University of Wisconsin, and of Dr. B. L. Robinson, increased considerably the expenditure of the Herbarium for salaries; so that the total expenditure of the Herbarium was $6329.84 in 1890–91, against $3048.60 in 1889–90, and $4493.23 in 1888–89. This additional expenditure is made possible by the gift, alluded to in last year's report, of $3500 a year for five years. This gift was made in the hope that it would ensure the completion of the Synoptical Flora of Professor Asa Gray; but thus far the progress of that great undertaking has been slow. Dr. Gray's copyrights continue to be a valuable resource to the Herbarium; and the preparation of a new edition of his Field, Forest, and Garden Botany was one of the labors of Professor Barnes during the year under review.

The report of the Director of the Botanic Garden (p. 156) will be found unusually interesting. The Garden itself was, as usual, of great service to the classes in Botany and to numerous visitors; but the two events of the year which most deserve attention are the transfer of all the collections and laboratories in Botany, except the Gray Herbarium, to quarters in the University Museum, and the measures taken to create there an interesting and instructive collection. The combined departments of Phanerogamic and Cryptogamic Botany are now liberally provided with lecture-rooms and laboratories, with storage and exhibition rooms. For the exhibition rooms tion will doubtless be considerably developed, as the plantations of the Arboretum become more extensive, and the trees and plants attain their natural size.

An important gift was made to the Arboretum last Summer by Mr. H. Hollis Hunnewell, — that of a fire-proof building to contain the herbarium and library of the Arboretum. The construction of this building has been already begun.

In the Chemical Laboratory the elementary courses were resorted to by an unusually large number of students, and there was an increased number of advanced students, who taxed the professors to the utmost. The charge of students capable of carrying on original investigations is very exhausting to the teachers who are obliged to plan and direct their investigations. Such labors are much more arduous than elementary teaching, and yet they are performed for a few students, each of whom is carrying on a distinct undertaking. The growth of the Graduate School brings more and more such work upon the principal professors in the various scientific establishments, and the chemical department had its full share of such work in 1890–91.

During the year the mineral collection was arranged in its new quarters at the University Museum, and a few weeks before Commencement the collection was opened to the public. The removal of these collections from Boylston Hall vacated two large rooms. The room in the second story was fitted up during vacation as a lecture-room. It seats nearly five hundred persons, is well lighted and ventilated, and is a great acquisition for the department. The corresponding room on the third floor is to be fitted up for an organic laboratory. It is a great satisfaction that the valuable mineralogical collection of the University is now placed in a fire-proof structure, and in ample rooms in which it can be suitably displayed. The Director has for several years given much thought and work to the accomplishment of this object, and now sees his wishes fulfilled in the completest and happiest way. The resulting increase of accommodation in Boylston Hall is no slight incidental advantage.

The expedition to Peru, under the charge of Professor William H. Pickering, has proved to be much more expensive than was expected, and the principal of the Boyden Fund has been drawn upon to meet the expenditures. When the objects of the expedition have been accomplished, it will be possible to allow the Boyden Fund to accumulate for a time, until the present drafts upon the principal are made good.

During the year 1890–91 the teachers of Geology, Palaeontology, Physical Geography, and Petrography came into the possession of spacious rooms provided for them in the Geological section of the Museum, — the section which connects the Northwestern corner block with the Museums of Botany and Mineralogy in the Oxford-street front. At the same time the accommodations of the Zoölogical Department were greatly improved. All the natural history departments of the University are now amply provided with lecture-rooms and laboratories at the University Museum and the Museum of Comparative Zoölogy. Some of the rooms, as, for example, the Geographical Museum, are not yet furnished and equipped; but the rooms needed for the various classes in those subjects, whether lecture-rooms or laboratories, are all in use, and together afford excellent accommodations for both teachers and students.

The Zoölogical Department gives the best evidence of its strength in the number of contributions which its teachers and students make to the publications of the Museum of Comparative Zoölogy (p. 187). The library of this Museum grows rapidly, and is already a collection of great value. The publications of the Museum are fully maintained in number, variety, and importance. There are, however, three unwelcome facts about the Museum which ought to be made known to the promoters of the University and of the sciences which the Museum so admirably illustrates. In the first place, several exhibition-rooms of great interest and importance are still unfinished, and cannot be completed without the expenditure of a considerable sum of money for cases and material. An aquarium and a live-stock room for the Zoölogical Department also remain to be provided. For these purposes the sum of $27,000 is needed, to be expended in the course of two or three years. Secondly, in order that the collections of the Museum should be opened to specialists for purposes of study and investigation under suitable conditions, more assistance is required in the Museum (p. 186), and to provide this assistance steadily the income of a permanent fund of $24,000 is needed. Thirdly, the Museum is in debt to the University treasury to the amount of $24,113.79, which debt was incurred in building the Geological section of the Museum, and in acquiring certain fossil collections which had to be bought when they were in the market. If this debt is repaid by annual instalments from the income of Museum funds, the Museum will be crippled in its operations for five or six years. It is very desirable that the Museum should be freed from this burden. The moderate sum of $75,000 would meet all three of the needs above described.

The Curator of the Museum has in past years given great sums to the Museum from his own private fortune; but he now has other plans for the advancement of science which prevent him from continuing to develop and support the Museum. The community owes him and the Founder of the Museum so much for what has already been accomplished, that it seems not unreasonable to expect that the moderate sums which are needed to put the Museum firmly on its feet will before long be provided.

The Director of the Peabody Museum of American Archaeology and Ethnology makes an interesting report (p. 188), in which he mentions a few incidents in the early history of the Museum, and sketches its rapid progress during the seventeen years that he has had charge of the collections.

The Museum received during the year the gift of $10,000 from Mr. Roger Wolcott, acting under the will of his father, Mr. Joshua Huntington Wolcott. The excellent conditions of this gift are stated in the Curator's report (pp. 190–191).

The increase of gifts to the Museum is very encouraging to the Trustees. It shows that the resources of the Museum are not to be limited to the income of the funds provided by the founder, Mr. George Peabody, but are to be increased and multiplied as the educated public comes to realize the immensity of the field in which the Museum does its work, and the inadequacy of its original endowment.

Professor Putnam has been appointed Chief of the Department of Archaeology and Ethnology at the World's Columbian Exposition, and in this capacity is directing various explorations and researches which cannot but be fruitful for the Museum as well as for the Columbian Exposition. An important expedition to Honduras has been organized by the Museum, and the money necessary for one year's work has been provided (pp. 194–195).

It will be noticed in the account which the Curator gives of the expenses of the year (p. 198), that the income of the Peabody Fund is less than half of the total expenditures of the year.

The Semitic Museum, which originated in the gift of $10,000 by Mr. Jacob H. Schiff, was formally opened to the public on the 13th of May, 1891, in temporary quarters within the Peabody Museum, where it attracts many visitors. Up to the close of the year only about half of Mr. Schiff's gift was expended; but orders already given will probably exhaust the remainder of the original sum. Beside the objects purchased, many others of great interest have been given to the Museum. The chief groups of objects are casts, mortuary stones, seals, tablets, manuscripts, and photographs. The casts are reproductions of Babylonian, Hebrew, Phoenician, Moabite, Arabic, Hittite, and Persian monuments. The manuscripts are Hebrew, Syriac, and Arabic. The photographs illustrate Semitic architecture, scenery, and manners and customs. A beginning has also been made of a collection of Semitic coins.

By the end of the current year the whole space which can be allotted to this collection in the Peabody Museum will be quite filled, and the question of permanent accommodations for the collection will begin to be urgent. At present the lecture-rooms and library of the Semitic Department are far removed from this collection. It would of course be much more advantageous if all the resources of the department were combined in one building.

The development of Summer courses of instruction has been somewhat rapid during the past three years. The following table shows the total amount of fees paid by students in the Summer courses in each summer since the year 1886, inclusive: —

886.	1887.	1888.	1889.	1890.	1891.
$1720.	$4060.	$4165.	$5191.	$6345.	$7873.50.

In the summer of 1891 the following courses were given at Cambridge: In Chemistry, four courses; in Botany, one; in Geology, three; in Physics, two; in Field Engineering, two; in English, one; in German, two; in French, two; in Anglo-Saxon, one; in Physical Training, one. For the summer of 1892 several new courses are announced in addition to those given in the summer of 1891. Most of these courses run for six weeks, occupying about the first half of the long vacation; but the different needs of the different departments produce some variations from this type.

In the summer of 1889, 188 persons attended the Summer courses; in the summer of 1890, 279; in the summer of 1891, 287.

The attention of the Faculty of Arts and Sciences was directed during the year under review to the expansion of the Summer courses, and their proved usefulness was fully recognized. After discussion and deliberation, the Faculty decided to admit to its list of courses that may be counted for the Bachelor's degree eight Summer courses — one in German, two in Engineering, one in Physics, one in Botany, and two in Geology, together with one in geological field-work, all of which courses are carried on under the supervision of a regularly appointed officer of instruction, and with proper tests of the industry and proficiency of the students. It is obvious that these Summer courses have great advantage for students of the natural sciences and engineering; for they give opportunity for field-work at the best season of the year, and with freedom to choose the best place for the kind of field-work which is, in the opinion of the instructor, most desirable.

Another interesting observation has been made in connection with the Summer courses, — namely, that six weeks of assiduous application to one subject for eight hours a day enables an earnest student to make an extraordinary progress in a new language or a new science. In those departments in which there are several graded courses, as for example in Chemistry, school-teachers who have no time at their disposal for study except during the Summer vacation, have been able to make very substantial attainments in a single science, by returning year after year, and taking the successive Summer courses in that science. A person in vigorous health, who can devote six weeks in each of four successive Summers to a single general topic, can make very nearly, if not quite, as much progress in that subject as in one solid year's residence at the University during term-time only.

Within the past five years there has been a remarkable increase in the number of students attending the University. Between October 1st, 1887, and October 1st, 1891, the increase was 965 students; whereas in the ten years from 1877–78 to 1887–88 the increase was only 458, and in the ten years from 1867–68 to 1877–78 the increase was 335. At the beginning of the year 1891–92 the increase over the number of the preceding year was 387. The report of the Dean of Harvard College (p. 70) gives the details of this increase so far as the College proper is concerned; but the gain of the past five years has been distributed through all the departments of the University, although it has been most striking in the Scientific School, the Graduate School, and the Law School (see pp. 84, 86, 112). It is hard to account for this sudden development. There have been no changes in the requirements for admission which have made it easier to enter the University in any department, and no changes of policy which have made it easier to procure any of the ordinary degrees. There has been nothing in the conditions of business throughout the country to lead one to suppose that families were better able than usual to send their sons to College. In the College proper and in the Graduate School there has been an increase in the amount of beneficiary money and other similar aids for poor students; but in the Scientific School, the Law School, and the Medical School — all of which have grown remarkably — the aids for poor students are insignificant. Within two years the price of board in Cambridge has been considerably reduced; so that a student who is forced to economize can now live in Cambridge as cheaply as at most of the other colleges of the country; but this fact alone cannot account for the sudden and great increase in the number of students. The increase has occurred simultaneously with the introduction and maintenance of the new method of carrying on the religious services of the College by ministers of different denominations and with completely voluntary attendance on the part of the students; but it would be difficult to maintain that this single change of policy could produce such an effect; for the Scientific School and the professional schools have always been completely independent of the College Chapel and of the regulations affecting the attendance at religious exercises of the students of the College proper. On the whole, the most probable view is that the unequalled resources of the University have become better known to the educated public throughout the country than they formerly were, and that the general policy of the University, both in the College and in the professional schools, has approved itself to teachers, parents, and professional men, and also to self-directing young men who are seeking a thorough education.

A great increase in the gross annual expenditures of the University has taken place simultaneously with the increase in the number of students. Thus, in 1888–89 the gross annual expenditures, including the cost of new buildings, rose to $904,943.56. In the next year it was almost a million dollars ($995,437.58), and in the year 1890–91 — the year under review — it was $884,538.83. In the whole history of the University the annual expenditures have never risen above $700,000 but once before, and they have risen above $600,000 only six times before 1888–89. A large part of this increase of annual expenditure is due to gifts to be immediately spent for buildings and other equipment; but another large part is met by the increase of tuition fees. Every student in Harvard University pays a tuition fee. The increase in the number of students between October 1st, 1889, and October 1st, 1891 (579), therefore, increased the annual receipts of the

University by about $90,000. It will be perceived that the increase of gross annual expenditure is proportionally much larger than the increase in the number of students. There are three reasons for this fact: In the first place, the plant of the University has been much added to and improved within the past five years. Secondly, the cost of the scientific establishments — like the great collections and laboratories — and the cost of the libraries bear no relation to the number of students using them. And thirdly, all the advanced instruction of the University is very costly in proportion to the number of students who receive it. The American public must enlarge its ideas of the cost of supporting a university. It may reasonably be inferred from the experience of Harvard University that after all the grounds, buildings, and collections of a university have been provided, an income of a million dollars a year will still leave the university with many pressing wants, many gaps in its instruction, and many fields of research untouched for lack of means.

In the process of building up a great University in Cambridge the Corporation is forced to consider, from time to time, the cost of board and lodging for students. The experience of the past seventeen years has demonstrated that a large number of students can be furnished with very ample board in Memorial Hall at a weekly price of about $4. The price of board at Memorial Hall during the year 1890–91 was $4.04 for the first third of the year; $4. for the second third; and $4.10 for the last third. The business management of the Dining Hall Association is excellent, the accounts being so kept that suitable provision is made from year to year for renewing all the perishable parts of the equipment, such as linen, crockery, cooking utensils and furniture. These renewals are somewhat costly. Including repairs and improvements, the expenditures in the Dining Hall during the last summer vacation were nearly $4000. It is believed that the stock and equipment of the Association are fully kept good.

For several years past the waiting-list at Memorial Hall has been unreasonably long, showing that many more students sought admission to the Hall than could be accommodated on the club-table plan with a permanent seat for each person. Near the close of the year 1890–91 the Directors of the Association resolved to try a new experiment. Reserving for clubs thirty-eight tables with a seating capacity of 514 persons, they decided that seventeen tables, with a seating capacity of 228 persons, should be carried on like hotel or restaurant tables, without providing a fixed seat for each person. Accordingly at the opening of the present year 516 persons were admitted to club-tables and 460 to the general or hotel tables. By the 20th of December 485 persons had been admitted to the general tables. By this measure the waiting-list was much reduced. On the 1st of October it was 50; on the 20th of December it was 36. About 250 additional students were thus admitted to the benefits of the Hall. During the first third of the current year the new method has worked very smoothly and seems to be generally acceptable. If the number of students in Cambridge should continue to increase, as it has increased during the last five years, the Association may either have fewer club-tables and more general tables, or increase the number of persons assigned to each club-table.

The Foxcroft Club, which was first organized in 1889, was carried on successfully during the year 1890–91 with a membership of about 200. This Club has proved that students can be provided with satisfactory meals, à la carte, at an average cost of about $0.40 a day. During the current year the dining-rooms of this Club have been enlarged and the number of members increased, and it now provides a large number of students with cheaper board than has been obtainable in Cambridge for thirty years past (see the Club's bill of fare, p. 220).

So far as board for students is concerned, Cambridge is now a very advantageous place. It is not the same with regard to lodgings. The total number of students who can be provided with rooms in College buildings is 1023, while there are at least 2000 students living in Cambridge; that is, only about half of the students resident in Cambridge can be accommodated in College buildings. The rest must seek rooms in private dormitories or in private houses. The consequence is that the prices of furnished rooms in Cambridge within a short distance of the College yard are undesirably high. The Corporation desires very much to be enabled to offer students a large number of plain rooms, simply furnished, at a price not much exceeding $50 a year, including the daily care of the rooms.

The common opinion that Harvard University is mainly an institution for the well-to-do is far from being correct. From some statistics concerning the College Class of 1891, collected by its Secretary, Mr. H. A. Davis, it appears that nearly eleven per cent of those who replied to his inquiries about their annual expenditure — excluding those who boarded at home — spent less than $500 a year. From the same source we learn that only eleven per cent of that class were sons of Harvard graduates, and only fifteen per cent were sons of graduates of other colleges. Nearly three quarters of the class were therefore sons of persons who did not themselves receive a college education. In the President's Report for the year 1877–78 it was mentioned that only one eighth of the undergraduates on the rolls of the College in June, 1878, were sons of graduates of Harvard. Mr. Davis's statistics point to the continuance of this condition of things. All the American colleges are mainly recruited from children of parents who were themselves not highly educated. Harvard University depends for its growth on the steady supply of entirely fresh material, not drawn to it by family considerations or inherited associations; but attracted by its prestige, resources, and privileges. The unrivalled resources of the University are, however, unknown to most Americans, educated or uneducated. Many persons suppose that one college is about as good as another, or one university very much like another, and that it does not make much difference to which of a hundred different institutions a young man may resort. The state universities have no tuition-fees, and many of the small colleges are situated in villages where board and lodging are cheap. On this account cheap board and cheap rooms in Cambridge are a necessary means for building up here a great, popular institution.

The Treasurer's Annual Statement will be found unusually interesting. The proper income of the year, apart from gifts, was larger than ever before, and every department of the

University was pecuniarily prosperous
fied desires. The special interest of t
lies in its description of important chan
as of July 31, 1891.

Among the "general investments,"
of the University have an interest, hav
two items of an exceptional character,
1790 and called "Houses and Lands i
an item dating from 1867 and called
Cambridge." The first has resulted fr
and credits relating to real estate in Ca
at $353,585.06; the second has result
chases of unimproved lands in Cambri
immediate or prospective. For twent
has seen clearly that these two accoun
embarrassing for two reasons — first,
liable to waste by the degeneration of
priation of parcels of the land to unpr
ondly, because the different Schools an
funds are represented by the "genera
have, as time goes on, identical interes
Cambridge.

To extinguish the item called "Uni
bridge," the Corporation has for sever
that account net gains from sales of se
has in this way reduced the item from
ber 1, 1872, to $4751.13 on July 31
transparent account to which can be ca
hereafter arising from sales of propert
eral investments, the Corporation has
Statement, p. 1) a new account to be c
for General Investments," and to this
sum of $4751.13 standing (July 31,
"Unimproved Lands in Cambridge."
thereby extinguished. The Corporati
obliged, in the future as in the past,
university purposes; but such purchas
should ever exceed the amount of the
Funds, can always be charged to the

under the title "Advances to University Lands," this account being allowed a fair rate of interest out of the unrestricted income of the University.

To disengage all the restricted funds — to whatever department belonging — from all interest in the large item called "Houses and Lands in Cambridge" and in the other real estate charged since 1866 to the account called "Unimproved Lands," the Corporation, at the suggestion of the Treasurer, has ordered (Treasurer's Statement, p. 3) "that all the real estate which on July 31, 1891, represented the investment account called Houses and Lands in Cambridge, together with all the real estate heretofore charged to the account called Unimproved Lands in Cambridge, be transferred, as of July 31, 1891, from the general investments to a special investment at a total valuation of $353,585.06, and that the account of such special investment be called 'University Houses and Lands.'" It has further ordered that this special investment be assigned to certain University Funds which are wholly unrestricted as regards both income and principal (Treasurer's Statement, p. 3). The Corporation believes that these measures will make the accounts clearer, and tend to prevent conflicts of pecuniary interests between different departments of the University. The time is at hand when the income of the unrestricted funds will be sufficient to meet the expenses which are clearly of common interest to all departments, such as general administrative salaries and expenses. When that time comes, and questions then arise as to the best use of new unrestricted funds, the measures above described will be found to have made the Corporation freer to deal with real estate in Cambridge for the general good of the University, and also to have disembarrassed the Corporation of possible antagonisms between the treasury rights of restricted and of unrestricted funds, and between the treasury interests of Cambridge and of Boston departments. The President invites the attention of the Overseers to the Treasurer's clear exposition of these measures, and of some supplementary votes which were passed simultaneously by the Corporation (Treasurer's Statement, pp. 1–7). The reasons for the several changes, and their effects in detail, will there be found fully set forth.

The attention of the Overseers is respectfully invited to the following reports on the several departments and scientific establishments.

CHARLES W. ELIOT,
President.

CAMBRIDGE, 5 January, 1892.

REPORTS OF DEPARTMENTS.

THE FACULTY OF ARTS AND SCIENCES.

To the President of the University:

Sir, — I have the honor of presenting the following report upon the action of the Faculty of Arts and Sciences during the academic year 1890–91: —

The year now reported upon is the first in which the reorganization of the administration of Harvard College, the Lawrence Scientific School, and the Graduate School, provided for by the amended statutes of May 21, 1890, took complete effect. Late in the preceding year the Faculty had delegated to the several administrative boards the conduct of ordinary matters of administration and discipline, so that the great mass of questions of detail and of special applications by individuals with which the academic year opens, and by which the Faculties and the Academic Council were formerly overwhelmed at their earlier meetings, was committed at once to the smaller boards. These matters were there disposed of with great efficiency and expedition, and certainly with much economy of force. As the year went on, the Faculty showed no disposition to resume control of any of the subjects thus delegated. It made provision for having the more serious cases of discipline reported to it, the statutes requiring its action in cases calling for the higher penalties; and at the close of the year it acted upon recommendations for degrees and the great variety of questions connected with them; but for the most part its time was given to questions of legislation rather than administration.

It cannot be said, however, that the labors of the individuals composing the Faculty have been lightened by this diminution of the range of its business. Of the sixty-eight members of the Faculty, thirty-three were also members of administrative boards, including the Deans of the College and Schools, respectively. To this number of instructors, then, the new organization brought a nominal demand for at least double the time required for administration heretofore, and practically a demand for much more than double the amount, in consequence of the much more direct responsibility pressing upon the members of a smaller body. It is obvious from this statement that a greater amount of work, legislative and administrative, is done by the present Faculty and its boards than was formerly done by the have patiently given their time to the often unattractive labors of the administrative boards and the committees entrusted with like functions.

During the last year the Faculty gave much attention to some details of organization designed to insure more efficient coöperation among instructors working in the same branch of study or in cognate branches. The rapid development of the elective system, calling more and more for special attainments within some definite part of the intellectual field, has tended strongly to separate instructors from each other and to fix the interests and the thoughts of each closely upon his own special work. On the other hand, the improvement of methods, the increase of equipment and of needs for equipment, and the new demands for united action created by the extension of higher instruction have no doubt of late tended to bring instructors together and to give greater importance to their action in common. As the net result of these opposing influences the various departments of study, — as, for example, Greek, English, French, Physics, and the like, — although never formally established by the bodies which preceded the present Faculty, have been gaining in strength for several years and securing a more and more distinct recognition as portions of the working machinery of this part of the University. Here and there a department, favored by the nature of its subject or by some strong personal influence, has outrun the others and has attained a recognized unity in advance of them, while others, from equally fortuitous conditions of an opposite kind, have lagged behind the general movement; but, on the whole, the tendency to solidify the departments has been well marked, and by this tendency some great advantages have been secured. The increased number and use of working libraries, which in some branches of study have so extended the possible range of the students' investigations as to transform the very system of instruction, have been fostered by the departments; the arrangement of conferences and lectures as adjuncts to class-room instruction has been encouraged; and the adjustment of courses of study to each other, as parts of a general body of knowledge, has been promoted, to the manifest improvement of the annual statement of courses offered.

As the unit of organization, however, the department is for many purposes too small. Besides the inconvenience of a subdivision for administrative purposes which does not correspond to any real or broad separation of intellectual interests, it has been found necessary even in the provisions for such rewards as Final Honors to recognize the close connection existing in fact between departments which are such as the proposal of courses of instruction, the preparation of papers for admission examinations, the care of working libraries, the supervision of holders of fellowships, the care in some cases of departmental publications, and the arrangements for lectures, conferences, readings and other auxiliary instruction in case of need, falls into the hands either of the divisions or of their component departments, or is divided between them, as is deemed best in any given case. In short, the system of organization is flexible and makes no attempt to secure uniformity where essential conditions are found to vary; but it establishes the larger unit of administrative division, gives it certain important functions, for some of which since the change in the functions of the Academic (now University) Council no provision had existed, and invites the closer coöperation of partially combined departments by the transfer of their ordinary administration in whole or in part to the division, where the members of all the departments concerned stand on equal terms in dealing with subjects of common interest.

The Faculty also took the further step of making provision for adding to any division upon certain terms a limited number of members who are not instructors in any department included within the division. In some cases this enlargement of the division for administrative purposes was made necessary, by the fact that only one or two instructors represent important fields of study which do not find any easy union with others for which the Faculty provides, — as, for example, is the case with Music, Fine Arts, and American Archaeology and Ethnology. But beyond this, the opinion had gained ground that much inequality in the terms on which in practice recommendations for Honors and the Higher Degrees are made might be avoided and a closer approach to some common standard might be secured, by means of a limited interchange of members and comparison of methods and experience between different sections of the Faculty. For the steady and just administration of degrees and distinctions much is required besides expert knowledge of the branch of study immediately concerned, and there is probably no department or division which could not profit by the presence and counsel of colleagues, whose experience has been gained in some other branch and who see the questions which may be laid before them from a different point of view from that which is perhaps most natural for those in whose domain the questions have arisen. Probably, too, no department or division could fail to profit in some degree by the comparison of observation and experience, gained by such of its members as have had an opportunity to see from the inside the working of some other group of instructors. The Academic Council formerly provided must needs be gradual, but it is believed that it takes the direction naturally called for by the recent development of our instruction, and that it will tend to a steady increase of regularity, efficiency, and united effort in dealing with much of the practical work of instruction.

The statement of the courses of instruction provided under the direction of the Faculty is given herewith, in somewhat condensed form, the steady growth of the list and the increase of its variety having brought it to the point where some curtailment of description is unavoidable. The usual statement of the number of hours of regular attendance for the student and of the number of students attending each course is given, the latter being the numbers at the close of the year, leaving out of the account such students as may for any reason have left a course before the final examination.

COURSES OF INSTRUCTION, 1890–91.*

SEMITIC LANGUAGES AND HISTORY.

For Graduates and Undergraduates : —

1. Professor LYON. — Hebrew. — Davidson's Introductory Hebrew Grammar. — Explanation of parts of Genesis and of the Psalm-book. 3 hours.
3 Se., 2 So., 1 Sp. Total 6.

6. Professor LYON. — Babylonian-Assyrian History from native sources, with comparison of the Greek and Roman writers. 1 hour.
2 Gr., 3 Se., 1 Sp. Total 6.

12. Professor LYON. — History of Israel, political and social, from the period of the Judges until Ezra. 2 hours.
1 Gr., 5 Se., 3 Ju., 1 So., 2 Fr., 1 Sp. Total 13.

13. Professor TOY. — History of the Hebrew Religion, with comparison of other Semitic Religions. 2 hours. 2 Gr., 2 Se., 1 Ju., 1 Fr. Total 6.

16. Professor TOY. — History of prechristian Hebrew literature. 2 hours.
1 Gr. Total 1.

15. Professor TOY. — Political and literary history of the Bagdad Califate. 1 hour. 3 Gr., 2 Se., 1 Ju. Total 6.

[14. Professor TOY. — Political and literary history of the Spanish Califate. 1 hour. Omitted in 1890–91.]

---

* To designate the various kinds of students in the several courses, the following abbreviations are used: Gr. for Graduate Student, Se. for Senior, Ju. for Junior, So. for Sophomore, Fr. for Freshman, Sp., for Special Student, Sc. for Scientific Student, Di. for Divinity Student, Law for Law Student, Me. for Medical Student, Ve. for Student in Veterinary Medicine, and Bu. for Student of the Bussey Institution.

Primarily for Graduates: —

2. Professor Lyon. — Hebrew (second course). Tenses. — Interpretation of parts of the Pr 2 hours.

[3^{1}. Professor Lyon. — Classical Aramaic (Syria Nöldeke. — Rödiger's Chrestomathy. — The Testament. 2 hours. 1st half-year.

[3^{2}. Professor Lyon. — Jewish Aramaic. — Ke Grammatik. — Brown's Aramaic Method. — I the Targums, and from Daniel and Ezra. 2

4. Professor Lyon. — Assyrian. — Lyon's Assy Delitzsch's Assyrian Grammar. — Delitzsch's A

5. Professor Lyon. — Assyrian (second course). mar. — The Cuneiform Inscriptions of Weste tions). 2 hours.

7. Professor Toy. — Arabic. — Lansing's Gram Nights. 2 hours.

8. Professor Toy. — Arabic (second course). — pretation of parts of the Moallakât, of Moten Korân. 2 hours.

[9. Professor Toy. — Ethiopic. — Dillmann's G 1 hour.

10. Professor Toy. — Phoenician. — Schröder's Inscriptionum Semiticarum. 1 hour.

[11. Professor Toy. — General Semitic Grammar

INDO-IRANIAN LANGU

1. Professor Lanman. — Sanskrit. — Sounds an mar). — Elementary composition and translati ing of easy prose and verse (Lanman's Reade

2. Professor Lanman. — Sanskrit (second cou Selections from the Pañcatantra, Mahā-Bhāra Manual and Böhtlingk's Chrestomathy). 3 h

Primarily for Graduates: —

3. Professor Lanman. — Sanskrit (third course). and literature of the Vedas. 3 hours. 2d ha

[4. Professor Lanman. — Pāli. — The Sacred Bo

GREEK.

Introductory Lectures for Freshmen studyi

(1) Dr. Morgan. — On Lysias and his Tim
(2) Professor Goodwin. — On Socrates an
(3) Professor J. W. White. — On Homer
(4) Dr. Tarbell. — On the Greek Theatre

A. Dr. TARBELL. — Herodotus (selections). — Homer (selections from Books I.-XII. of the Iliad). — Reading at sight. 3 hours.
1 Se., 2 Ju., 1 So., 15 Fr., 2 Sp. Total 21.

F. Dr. TARBELL. — Greek Prose Composition (elementary course). 3 hours a fortnight. 1 Ju., 4 Fr., 2 Sp. Total 7.

B. Mr. C. P. PARKER. — Lysias (selections). — Plato (Apology and Crito). — Homer (Odyssey, Books VII.-XII.). — Euripides (Medea). — Reading at sight. 3 hours. 1 Se., 42 Fr., 2 Sp. Total 45.

C. Professor J. W. WHITE and Dr. TARBELL. — Lysias (selections). — Plato (Apology and Euthyphro). — Homer (Odyssey, Books I.-VI.). — Aristophanes (Clouds). — Reading at sight. 3 hours.
2 Ju., 2 So., 29 Fr., 3 Sp. Total 36.

D. Professor WRIGHT and Dr. MORGAN. — Lysias and Isocrates (selections). Plato (Apology and Laches). — Homer (Odyssey, six books), — Euripides (Medea). — Aristophanes (Clouds). — Reading at sight. 3 hours.
2 So., 28 Fr. Total 30.

E. Dr. MORGAN. — Greek Prose Composition (second course). — Goodwin's Moods and Tenses. 3 hours a fortnight. 2 So., 12 Fr. Total 14.

1. Dr. MORGAN. — Lucian (selections). — Demosthenes (Philippics). — Lyric Poets (selections). — Euripides (Alcestis). — Aristophanes (Peace). — Reading at sight. 3 hours. 1 Ju., 15 So. Total 16.

2. Professor J. W. WHITE. — Thucydides (Book I.). — Aristophanes (Birds). — Sophocles (Oedipus Tyrannus). — Aeschylus (Prometheus Bound). — Collateral reading of the Acharnians of Aristophanes and the Antigone of Sophocles. — Reading at sight. 3 hours.
1 Gr., 2 Se., 1 Ju., 28 So., 1 Fr. Total 33.

3. Professor WRIGHT. — Greek Prose Composition (third course). — Translation and original composition. — Oral exercises. 1 hour.
2 Gr., 3 Se., 4 Ju., 11 So. Total 20.

6. Professor WRIGHT. — Demosthenes (On the Crown, with parts of the False Legation). — Aeschines (Against Ctesiphon, selections). — Lycurgus (Against Leocrates). — Aeschylus (Seven against Thebes). — Sophocles (Electra). — Aristophanes (Frogs). 3 hours. 9 Se., 15 Ju., 2 So. Total 26.

For Graduates and Undergraduates: —

7. Professor WRIGHT. — Greek Prose Composition (fourth course). — Written composition in the style of Demosthenes and of Plato, with studies of classical models. — Translation of selections of standard English (rhetorical and philosophical). 1 hour. 1 Gr., 11 Se., 2 Ju. Total 14.

4. Professor J. W. WHITE. — The Comedies of Aristophanes, with lectures on the Scenic and Private Antiquities. 2 or 3 hours.
4 Gr., 5 Se., 1 Ju. Total 10.

12. Professor WRIGHT. — Three Centuries of Greek History (600–300 B.C.). — Studies in Institutions and in Biography. — Lectures, with collateral reading and theses. 3 hours. 3 Gr., 10 Se., 1 Ju., 3 So., 1 Sp. Total 18.

8. Professor GOODWIN. — Plato (Republic.) — Aristotle (Ethics, Books I.-IV. and X.). 3 hours. 1 Gr., 12 Se., 1 Ju. Total 14.

9. Professor Goodwin. — The Tragedies of Aes

[13. Professor Goodwin. — Aristotle (Politics).

[10. Professor J. W. White. — The Life of the
and illustrated by the aid of the Literature an

[11. Professor Allen. — History of Greek Lite
tion of the students' private reading. 3 hour

LATIN.

Primarily for Undergraduates : —

A. Mr. C. P. Parker. — Cicero (selected orat
reading at sight. 3 hours.

F. Dr. Howard. — Latin Composition (element
on selected Lives of Nepos. 3 hours a fortni

B. Drs. Morgan and Howard and Mr. Nicols
Livy (Books XXI. and XXII.). — Terence (
ing at sight. 3 hours. 2

C. Drs. Morgan and Howard and Mr. Nicols
Livy (Books I. and II.). — Terence (Phorm
sight. 3 hours.

D. (*Advanced Course for Freshmen.*) Dr. Ho
— Livy (Books I. and II.). — Terence (Phor
— Plautus (Menaechmi). — Reading at sight.

E. Mr. Nicolson. — Latin Composition (second

1. Professors Lane and Smith. — Pliny (selec
ries; Dialogus). — Horace (Odes and Epodes
2 Se.,

2. Mr. C. P. Parker. — Pliny (selected letters)
tions). — Horace (Odes, and Epodes). — Rea
1 Se., 2 Ju.,

3. Mr. C. P. Parker. — Latin Composition (thi
2 Gr.,

4. Dr. Tarbell. — Horace (Satires and Epistle
16 Se.,

[5. Professor Greenough. — Ancient Philosoph
Finibus; Academica). 3 hours. 1st half-ye

For Graduates and Undergraduates : —

6[1]. Professor Smith. — The Reign of Tiberi
(Books I.-VI.) and Suetonius' Life of Tiber
tutions of the early empire. 3 hours. 1st h

6². Professor **Lane.** — Roman Society in the first century. — The principal Satires of Juvenal, with selected Epigrams of Martial. 3 hours. 2d half-year. 2 Gr., 10 Se., 16 Ju., 1 So. Total 29.

7. Professor **Allen.** — Practice in Latin expression and style. — Study of selections from classical prose as models. — Translation into Latin prose. 1 hour, 2 Gr., 8 Se., 3 Ju. Total 13.

8¹. Professor **Lane.** — Plautus. — Cicero (Brutus). 3 hours. 1st half-year. 2 Gr., 19 Se., 1 Ju., 1 So. Total 23.

8². Professor **Lane.** — Lucretius. — Catullus. 3 hours. 2d half-year. 3 Gr., 16 Se., 3 Ju. Total 22.

CLASSICAL PHILOLOGY.

Primarily for Graduates: —

21. Professor **Allen.**—The Greek Dialects, studied from Inscriptions.—Lectures on Greek Grammar. 3 hours. 2 Gr. Total 2.

22. Professor **Lane.**— Latin Grammar. — Quintilian (Book I.).— Aulus Gellius. —Latin Inscriptions (Allen's Early Latin Remnants).—Discussions of points of grammar, pronunciation, &c. 1 hour. 5 Gr., 4 Se. Total 9.

[23. Professor **Goodwin.** — The Athenian Expedition to Sicily in 415–413 B.C., studied in connection with the Sixth and Seventh Books of Thucydides. 2 hours. 2d half-year. Omitted in 1890–91.]

[24. Professor **Goodwin.** — The Political and Legal Antiquities of Athens, illustrated by the Legal Orations of Demosthenes and other Attic Orators. 2 hours. 2d half-year. Omitted in 1890–91.]

[25. Professor J. W. **White.** —The Private Life of the Greeks (selected topics, with special study of the literary sources). 2 hours. Omitted in 1890–91.]

26. Professor **Allen.** — The Roman Religion and Worship. — Ovid's Fasti. 3 hours. 2d half-year. 3 Gr., 1 Se. Total 4.

27. Dr. **Tarbell.** — Roman Archaeology. — Roman Architecture and Engineering. — Topography and architectural history of the city of Rome. 2 hours. 1 Gr., 1 So. Total 2.

ENGLISH.

Primarily for Undergraduates: —

A. Professor **Briggs** and Mr. **Lathrop.** — Rhetoric and English Composition. — A. S. Hill's Rhetoric. — Lectures on Rhetoric and on English Literature. — Written exercises and oral discussions. 3 hours. 1 Se., 8 So., 316 Fr., 63 Sp., 20 Sc. Total 408.

B. Professors **Wendell** and **Kittredge**, and Messrs. **Gates**, **Baker**, **Carey**, and **Hurlbut.** — Twelve Themes. — Lectures and discussions of themes. 5 Se., 12 Ju., 260 So., 33 Fr., 24 Sp., 8 Sc. Total 342.

C. Messrs. **Baker** and **Thompson.** — Forensics. — Lectures on Argumentative Composition. — A brief based on a master-piece of argumentative composition. — Five forensics, preceded by briefs. — Discussions of briefs and of forensics. 35 Se., 217 Ju., 11 So., 9 Sp., 1 Sc. Total 273.

12. Professor **Wendell** and Mr. **Fletcher**. — English Composition. — Lectures and daily themes. 3 hours. 2 Gr., 56 Se., 57 Ju., 1 So., 4 Sp. Total 120.

13. Mr. **Baker**. — Argumentative Composition. — Eight forensics, preceded by briefs. — Lectures and conferences. 1 hour. 9 Se., 1 Sp. Total 10.

6. Professors **Taussig** and **Hart**, and Messrs. **Hayes** and **Mason**. — Oral Discussion of Topics in Political Economy and History. 2 hours. 25 Se. Total 25.

10. Mr. **Hayes**. — Elocution. 2 hours. 21 Se., 22 Ju., 2 So., 3 Sp., 1 Sc. Total 49.

[8¹. Professor **Child**. — Anglo-Saxon. — Sweet's Anglo-Saxon Reader. 3 hours. 1st half-year. Omitted in 1890-91.]

11. Professor **Kittredge**. — English Literature. — Bacon. — Milton. 3 hours. 13 Se., 1 Ju., 10 So., 1 Fr., 2 Sp. Total 27.

7. Professor **Wendell**. — English Literature of the Eighteenth Century. 1 hour. 1 Gr., 24 Se., 28 Ju., 26 So., 2 Fr., 5 Sp. Total 86.

[8. Professor A. S. **Hill**. — English Literature. — Poets of the Nineteenth Century. 2 hours. 1st half-year. Omitted in 1890-91.]

9. Mr. **Gates**. — English Literature. — Prose Writers of the Nineteenth Century. 1 hour. 26 Se., 24 Ju., 19 So., 4 Fr., 11 Sp., 2 Sc. Total 86.

For Graduates and Undergraduates: —

5. Professor **Briggs**. — English Composition (advanced course). 3 hours. 1 Gr., 18 Se., 4 Ju., 1 Sp. Total 24.

[1. Professor **Child**. — English Literature. — Chaucer. 3 hours. Omitted in 1890-91.]

2. Professor **Child**. — English Literature. — Shakspere. 3 hours. 5 Gr., 43 Se., 28 Ju., 23 So., 2 Fr., 6 Sp. Total 107.

Primarily for Graduates: —

19. Professor **Kittredge**. — Historical English Grammar. 3 hours. 2d half-year. 3 Gr., 2 Se. Total 5.

16. Professor **Briggs**. — History and Principles of English Versification. 1 hour. 2 Gr., 4 Se., 1 Ju. Total 7.

[3². Professor **Kittredge**. — Anglo-Saxon Poetry. 3 hours. 2d half-year. Omitted in 1890-91.]

4. Professors **Child** and **Kittredge**. — Early English. — Old English literature from 1200 to 1450. — Mätzner's Altenglische Sprachproben. 3 hours. 3 Gr., 3 Se. Total 6.

14. Mr. **Baker**. — English Literature. — The Drama from the Miracle Plays to the Closing of the Theatres. 1 hour. 2 Gr., 5 Se., 1 Ju., 2 Sp. Total 10.

[17. Professor **Wendell**. — English Literature of the Elizabethan period. 1 hour. Omitted in 1890-91.]

[15. Professor **Briggs**. — English Literature of the Seventeenth Century. 2 hours. 2d half-year. Omitted in 1890-91.]

20. Professor **Wendell**. — Course of Research. 1 Gr. Total 1.

GERMAN.

Primarily for Undergraduates : —

A. Mr. Nichols and Dr. Poll. — Elementary Course. — Grammar. — Translation from German into English, and elementary exercises in translating into German. 3 hours.
9 Se., 4 Ju., 6 So., 184 Fr., 28 Sp., 10 Sc., 1 Law. Total 192.

B. Dr. Poll. — Elementary Course. — Grammar. — Composition. — Translation and reading at sight. — Selections in Prose and Poetry. 5 hours.
2 Se., 1 Ju., 18 Fr., 3 Sp. Total 24.

C. Mr. Nichols. — Intermediate Course. — Grammar. — Composition. — Translation and reading at sight. — Selections from the Writers of the Eighteenth and Nineteenth Centuries. 3 hours.
2 Ju., 5 So., 62 Fr., 3 Sp., 4 Sc. Total 76.

1*a*. Professor Bartlett. — Writers of the Nineteenth Century. — German Prose, Poetry, and Drama. — Composition. — Reading at sight. 3 hours.
2 Se., 6 Ju., 57 So., 9 Fr., 2 Sp., 2 Sc. Total 78.

1*b*. Professor von Jagemann. — German Prose. — Subjects in History and Biography. — Composition. — Reading at sight. 3 hours.
8 Se., 2 Ju., 37 So., 12 Fr., 4 Sp., 6 Sc., 1 Di. Total 70.

[1*c*. German Prose. — Subjects in Natural Science. — Reading at sight. 3 hours.
Omitted in 1890–91.]

2. Professor Francke. — Lessing and the German Drama. — Practice in writing German. 3 hours. 4 Se., 11 Ju., 14 So., 18 Fr., 5 Sp., 1 Sc. Total 53.

3. Professor Bartlett. — Schiller and his Contemporaries. — Practice in writing German. 1 Gr., 4 Se., 6 Ju., 5 So., 6 Fr., 1 Sc. Total 23.

4. Professor von Jagemann. — Goethe and the Romantic School. — Practice in writing German. 3 hours.
1 Gr., 6 Se., 16 Ju., 31 So., 13 Fr., 2 Sp. Total 69.

9. Dr. Poll. — German Grammar and practice in writing German. 1 hour.
1 Gr., 5 Se., 10 Ju., 17 So., 11 Fr., 5 Sp. Total 49.

5. Professor Francke. — General History of German Literature. — Lectures, with collateral reading. 3 hours. 5 Se., 9 Ju., 8 So., 1 Sp. Total 23.

For Graduates and Undergraduates : —

[6. Professor Francke. — History of German Literature and Art from the Reformation to the middle of the Nineteenth Century. — Lectures and theses. 2 hours. Omitted in 1890–91.]

7. Professor Francke. — History of German Literature and Art in the Middle Ages. — German Mythology. — Epics and Lyrics of the time of the Crusades. — Romanesque and Gothic Art. — Growth of Cities. — The Renaissance. — Lectures and theses. 2 hours. 2 Se., 3 Ju., 2 So. Total 7.

8. Professor von Jagemann. — Nibelungenlied. — Kudrun. — Iwein. — Parzival. — Walther von der Vogelweide. — Translation into Modern German. — Lectures and theses. 2 hours. 1 Gr., 2 Se., 1 Ju., 1 So. Total 5.

Primarily for Graduates : —

20*a*. Professor Francke. — Critical Study of selected topics in the History of German Literature. 1 hour. 1 Gr., 1 Se. Total 2.

20*b*. Professor Bartlett. — Critical Study of Schiller's Life and Works. Thesis. 1 hour. 1 Gr. Total 1.

GERMANIC PHILOLOGY.

Primarily for Graduates : —

12. Professor von Jagemann. — Gothic. 1 hour. 2 Gr., 3 Se. Total 5.

[13. Professor Kittredge. — Icelandic (Old Norse). — Selections from the Sagas and the Elder Edda. 3 hours. Omitted in 1890–91.]

[14. Professor von Jagemann. — Old Saxon. 1 hour. Omitted in 1890–91.]

[15. Professor von Jagemann. — Old High German. 1 hour. Omitted in 1890–91.]

16. Professor Kittredge. — Germanic Mythology. 3 hours. 1st half-year. 2 Gr. Total 2.

[17. Professor von Jagemann. — Middle High German. — Critical study of a text (advanced course). 1 hour. Omitted in 1890–91.]

18. Professor von Jagemann. — Historical Grammar. — Introduction to the study of Germanic Philology. 1 hour. 1 Gr. Total 1.

FRENCH.

Primarily for Undergraduates : —

A. Professor de Sumichrast and Dr. Marcou. — Elementary Course. — French Prose. — Chardenal's First and Second French Courses. 3 hours. 3 Se., 3 Ju., 4 So., 30 Fr., 15 Sp., 11 Sc. Total 66.

1*a*. Professors Cohn and de Sumichrast and Dr. Marcou. — Grammar, reading, and composition. — George Sand. — Dumas. — About. — Sandeau. — La Fontaine. 3 hours. 1 Gr., 4 Se., 10 Ju., 30 So., 100 Fr., 19 Sp., 5 Sc. Total 169.

1*b*. Professor Sanderson and Dr. Marcou. — Reading at sight of French Prose. Grammar. — Translation from French to English and from English to French. 3 hours. 4 Se., 8 Jr., 15 So., 34 Fr., 4 Sp., 5 Sc. Total 70.

2. Professor Sanderson. — French Prose and Poetry. — La Fontaine. — Corneille. — Racine. — Molière. — Beaumarchais. — Alfred de Musset. — Balzac. — Historical Grammar. — Composition. 3 hours. 1 Gr., 8 Se., 14 Ju., 67 So., 46 Fr., 10 Sp., 1 Sc. Total 147.

3. Dr. Marcou. — Practice in writing and speaking French (elementary course). 2 hours. 4 Se., 7 Ju., 12 So., 11 Fr., 4 Sp., 2 Sc. Total 40.

4. Mr. Danion. — Practice in writing and speaking French (intermediate course). 2 hours. 1 Gr., 7 Se., 19 Ju., 21 So., 10 Fr., 2 Sp., 2 Sc. Total 62.

5. Professor de Sumichrast. — Practice in writing and speaking French (advanced course). — Oral discussions. 2 hours. 5 Se., 8 Ju., 3 So., 4 Fr., 1 Sc. Total 21.

6. Professors **Bôcher** and **de Sumichrast**. — General view of French Literature. — Théâtre classique. — Bossuet. — Voltaire. — Rousseau. — Victor Hugo. — Themes. 3 hours. 4 Se., 18 Ju., 24 So., 23 Fr., 6 Sp. Total 75.

For Graduates and Undergraduates : —

[7. Professors **Cohn** and **Sanderson**. — French Literature in the Nineteenth Century. — Lectures, themes, and collateral reading. 3 hours.
Omitted in 1890–91.]

8. Professors **Cohn** and **Sanderson**. — French Literature in the Eighteenth Century. — Lectures, themes, and collateral reading. 3 hours.
1 Gr., 10 Se., 11 Ju., 8 So., 2 Fr., 1 Sp. Total 33.

[9. Professors **Bôcher** and **de Sumichrast**. — French Literature in the Seventeenth Century. — Lectures, themes, and collateral reading. 3 hours.
Omitted in 1890–91.]

10. Professors **Bôcher** and **de Sumichrast**. — French Literature in the Sixteenth Century. — Lectures, themes, and collateral reading. 3 hours.
4 Se., 1 Ju., 3 So., 1 Fr. Total 9.

13. Professor **Cohn**. — French Grammar. — Critical Study of modern texts. — Composition. 3 hours. 1 Gr., 2 Se., 1 Ju. Total 4.

Primarily for Graduates : —

[11. Dr. **Marcou**. — French Literature from the Thirteenth to the end of the Fifteenth Century. — Lectures, themes, and collateral reading. 3 hours.
Omitted in 1890–91.]

12. Dr. **Marcou**. — French Literature from the invasion of the barbarians to the Thirteenth Century. — Lectures, themes, and collateral reading. 3 hours.
1 Gr., 2 Ju. Total 3.

Courses of Research.

20. Study of special topics in French Literature.

(*a*) Professor **Cohn**. — The *Chansons de Geste*. 1 Se.
(*b*) Dr. **Marcou**. — The Romances of the Round Table. 1 Se.
(*d*) Professor **Bôcher**. — Montaigne. — Thesis. 1 Se.
(*g*) Professor **Sanderson**. — George Sand and Balzac as representatives of French Idealism and Realism. 1 Gr.

Total 4.

ITALIAN.

Primarily for Undergraduates : —

1. Professor **Sheldon**. — Elements of Grammar. — Selections from modern authors. — Elementary exercises in writing Italian. 3 hours.
1 Gr., 8 Se., 13 Ju., 12 So., 13 Fr., 1 Sp. Total 48.

2. Professor **Sheldon**. — Literature of the Fifteenth and Sixteenth Centuries. Torquato Tasso. — Ariosto. — Machiavelli. — Pulci. — Reading at sight. — Syntax and prose composition, with reading of modern texts. 3 hours.
3 Se., 4 Ju., 1 So., 1 Sp. Total 9.

Primarily for Graduates ; —

3. Professor **Nash**. — "Il Trecento" (selections from Boccaccio, Petrarca, Dante). — Early Italian (Nannucci's Manuale della Letteratura del Primo Secolo). — Outline of the History of Italian Literature. — Composition. 3 hours. 1 Gr., 2 Se., 1 Ju. Total 4.

4. Professor Norton. — Literature and the Fine Arts in Italy during the Middle Ages and the Renaissance, with special study of Dante. 3 hours.
1 Gr., 8 Se., 1 Ju., 1 Di. Total 11.

SPANISH.

Primarily for Undergraduates: —

1. Professors Nash and Sheldon. — Elements of Grammar. — Gil Blas. — El Eco de Madrid. — Elementary exercises in writing Spanish. 3 hours.
1 Gr., 16 Se., 17 Ju., 17 So., 32 Fr., 5 Sp., 1 Sc. Total 89.

2. Professor Nash. — Modern Literature (novels, plays, etc.). — Reading at sight. — Advanced Grammar (Syntax). — Conversation. — Prose composition. 3 hours. 2 Se., 1 Ju., 1 So. Total 4.

Primarily for Graduates: —

[3. Literature of the Sixteenth and Seventeenth Centuries (selections from Calderon, Lope de Vega, and Cervantes). — Early Spanish (the Poem of the Cid). — Outline of the History of Spanish Literature (lectures, with collateral reading). 3 hours. Omitted in 1890–91.]

ROMANCE PHILOLOGY.

Professor Sheldon. — Six lectures introductory to the comparative study of the Romance languages.

Primarily for Graduates: —

2. Professor Sheldon. — Phonetics, with special reference to the explanation of sound-changes in the Romance languages. 2 hours. 2d half-year.
2 Gr., 3 Se. Total 5.

[3. Professor Sheldon. — Old French. — Phonology and Inflexions. — The oldest texts. — La Chanson de Roland. — Joinville. — Chrétien de Troies. — Aucassin et Nicolette. 2 hours. Omitted in 1890–91.]

4. Professor Sheldon. — Provençal. — Language and Literature, with selections from the poetry of the Troubadours. 2 hours. 2d half-year.
2 Se., 1 Ju. Total 3.

[5. Professor Sheldon. — Low Latin. 2 hours. 2d half-year.
Omitted in 1890–91.]

[6. Professor Sheldon. — Old French Dialects, with special reference to Anglo-Norman. 2 hours. Omitted in 1890–91.]

7. Professor Sheldon. — The French Element in English. 2 hours.
1 Se. Total 1.

20. Professor Sheldon. — Course of Research. 1 Gr. Total 1.

PHILOSOPHY.

Primarily for Undergraduates: —

Professor Royce. — Twelve Introductory Lectures on the History and Problems of Philosophy. (Open to the public.)

INTRODUCTORY COURSE.

1. **Professors PALMER and JAMES and Dr. SANTAYANA. — General Introduction to Philosophy. — Logic, Psychology, and Metaphysics. — Jevons' Lessons in Elementary Logic. — Murray's Handbook of Psychology. — Lotze's Outlines of Metaphysics. 3 hours.**
34 Se., 68 Ju., 67 So., 6 Fr., 25 Sp., 1 Sc. Total 201.

For Graduates and Undergraduates : —

SYSTEMATIC COURSES.

2. Professor JAMES. — Psychology. — James' Principles of Psychology. — Recitations, theses, lectures, and illustrative experiments. 3 hours.
4 Gr., 13 Se., 7 Ju., 3 So., 1 Sc. Total 28.

3. Professor ROYCE. — Cosmology. — Discussion of the Principal Problems of the Philosophy of Nature, with special reference to the modern doctrine of Evolution. — Lectures and theses. 3 hours.
2 Gr., 27 Se., 11 Ju., 2 Sp., 1 Sc., 1 Di. Total 44.

4. Professor PALMER. — Ethics. — The Theory of Morals. — Lectures, theses, and private reading. 3 hours.
5 Gr., 37 Se., 13 Ju., 4 So., 3 Sp., 1 Law. Total 63.

5. Professor F. G. PEABODY. — The Philosophy of Religion; its methods and principles. — Lectures and an essay, 1 hour.
3 Gr., 4 Se., 1 Ju., 1 Sp. Total 9.

6. Professor EVERETT. — The Psychological Basis of Religious Faith. 1 hour.
2 Sp., 1 Sc. Total 3.

HISTORICAL COURSES.

8. Professor EVERETT. — Study in the Comparative History of Religions, particularly the Vedic religion, the Hindu philosophies, Buddhism, Mazdaism, and the Chinese religions. 2 hours. 2 Se., 1 Sp., 1 Sc. Total 4.

[9. Professor PALMER. — Greek Philosophy. — Zeller's Outlines of Greek Philosophy. — Lectures and theses. 3 hours. Omitted in 1890-91.]

10. Professor JAMES. — Descartes, Spinoza, and Leibnitz. — Lectures and theses. 3 hours. 5 Se., 1 Ju. Total 6.

11. Dr. SANTAYANA. — English Philosophy from Hobbes to Hume. — Lectures and theses. 3 hours. 7 Se., 2 Ju., 1 Sp. Total 10.

12. Professor ROYCE. — The Movement of German Thought from 1770-1830. — Kant. — Fichte. — Schelling. — Hegel. — Lectures, theses, and private reading. 3 hours. 3 Gr., 13 Se., 2 Ju. Total 18.

[13. Dr. SANTAYANA. — Contemporary Systems. — The Philosophy of Lotze. — Lotze's Microkosmus. 3 hours. Omitted in 1890-91.]

14. Professor F. G. PEABODY. — The Ethics of the Social Questions. — The questions of Charity, Divorce, the Indians, Temperance, and the various aspects of the Labor Question (Socialism, Communism, Arbitration, Co-operation, etc.), as problems of practical Ethics. — Lectures, essays, and practical observations. 3 hours.
4 Gr., 53 Se., 28 Ju., 4 So., 3 Fr., 7 Sp., 1 Sc., 3 Di. Total 103.

Primarily for Graduates : —

7. Professor EVERETT. — The Content of Christian Faith. — Lectures and essays. 3 hours.

COURSES OF RESEARCH.

20*b*. Professor ROYCE. — Metaphysical Seminary. — Subject for the year: The Development of the Hegelian System. — Lectures, papers, and original research. 2 hours. 3 Gr. Total 3.

20*c*. Professor PALMER. — Ethical Seminary. — Subject for the year: Modern Pessimism. — Schopenhauer and Hartmann. — Theses. 2 hours.
4 Gr., 1 Se., 1 Di. Total 6.

20*d*. Professor PALMER. — Questions in Ethics for individual investigation.
2 Gr. Total 2.

POLITICAL ECONOMY.

Primarily for Undergraduates: —

1. Professor TAUSSIG and Mr. COLE. — First half-year: Mill's Principles of Political Economy. 3 hours.

Second half-year: —

Division *A* (Theoretical): Mill's Principles of Political Economy. — Cairnes's Leading Principles of Political Economy. 3 hours.

Division *B* (Descriptive): Lectures on Finance, Labor and Capital, Coöperation. — Hadley's Railroad Transportation. — Laughlin's Bimetallism. 3 hours.

A, 10 Se., 53 Ju., 50 So., 2 Fr., 17 Sp., 1 Sc., 1 Law; *B*, 12 Se., 31 Ju., 15 So., 2 Fr., 7 Sp. Total 201.

4. Professor DUNBAR. — Economic History of Europe and America since the Seven Years' War. — Lectures and written work. 3 hours.
29 Se., 28 Ju., 25 So., 4 Fr., 16 Sp., 1 Sc. Total 103.

For Graduates and Undergraduates: —

2. Professor TAUSSIG and Mr. BROOKS. — History of Economic Theory. — Examination of selections from Leading Writers. — Socialism. 3 hours.
4 Gr., 10 Se., 8 Ju., 1 Sp. Total 23.

3. Mr. BROOKS. — Investigation and Discussion of Practical Economic Questions. — Social Questions. — Short theses. 3 hours. 1st half-year.
1 Gr., 7 Se., 1 Ju., 1 Sp. Total 10.

6. Professor TAUSSIG. — History of Tariff Legislation in the United States. 2 hours. 2d half-year. 1 Gr., 28 Se., 12 Ju., 2 Sp. Total 43.

8. Mr. COLE. — History of Financial Legislation in the United States. 2 hours. 1st half-year. 1 Gr., 29 Se., 13 Ju., 3 Sp. Total 46.

7. Professor DUNBAR. — Public Finance and Taxation. — Cohn's Finanzwissenschaft. 3 hours. 2 Gr., 4 Se., 1 Ju. Total 7.

9. Professor TAUSSIG. — Railway Transportation. — Lectures and written work. 3 hours. 2d half-year. 14 Se., 4 Ju., 2 Sp. Total 20.

Primarily for Graduates: —

COURSES OF RESEARCH.

20. Professors DUNBAR and TAUSSIG. — Special topics in Economic Theory and History. 1 Gr., 2 Se. Total 3.

HISTORY.

For Undergraduates: —

1. Professor **Channing**. — Mediaeval and Modern European History (introductory course). 3 hours. 4 Ju., 51 So., 162 Fr., 31 Sp., 7 Sc. Total 255.

2. Professor **Macvane**. — Constitutional Government (elementary course). 3 hours. 1st half-year.
1 Se., 21 Ju., 73 So., 74 Fr., 28 Sp., 2 Sc. Total 199.

[4. Mr. **Bendelari**. — Roman History to the reign of Diocletian. 3 hours.
Omitted in 1890–91.]

5. Mr. **Bendelari**. — History of Western Europe from the Germanic Invasions to the Tenth Century, with especial reference to Institutions. 3 hours.
5 Se., 3 Ju., 6 So., 1 Fr., 2 Sp. Total 17.

8. Dr. **Snow**. — History of France to the reign of Louis XIV., with especial reference to Institutions. 3 hours. 5 Se., 2 Ju. Total 7.

9. Dr. **Gross**. — Constitutional History of England to the Sixteenth Century. 3 hours. 1 Gr., 10 Se., 6 Ju., 2 So., 1 Fr. Total 20.

10. Professor **Channing**. — American History (to 1783). 3 hours.
14 Se., 15 Ju., 22 So., 1 Sp., 2 Sc. Total 54.

11. Mr. **Bendelari**. — European History during the Seventeenth Century and the first half of the Eighteenth. 3 hours.
12 Se., 15 Ju., 12 So., 7 Fr., 3 Sp. Total 49.

12. Professors **Macvane** and **Channing**. — European History from the Middle of the Eighteenth Century. 3 hours.
1 Gr., 25 Se., 31 Ju., 50 So., 4 Fr., 12 Sp. Total 123.

13. Professor **Hart**. — Constitutional and Political History of the United States (1783–1861). 3 hours. 43 Se., 40 Ju., 26 So., 2 Fr., 5 Sp., 1 Sc. Total 117.

14. Professor **Hart**. — General History of the United States. 3 hours. 2d half-year. 3 Se., 15 Ju., 32 So., 17 Fr., 16 Sp., 2 Sc. Total 85.

15. Dr. **Snow**. — Elements of Public International Law. — History of Treaties. 3 hours. 37 Se., 9 Ju., 2 Sp. Total 48.

Primarily for Graduates: —

21. Mr. **Bendelari**. — Early Mediaeval Institutions. 1½ hours. 1 Gr. Total 1.

22. Dr. **Gross**. — The Sources and Literature of English Constitutional History. 1 hour. 1 Se. Total 1.

[23. Dr. **Snow**. — History of the Government and Institutions of France to the reign of Louis XIV. Omitted in 1890–91.]

24. Professor **Emerton**. — General Church History. 3 hours.
1 Se., 1 Sp. Total 2.

[25. Mr. **Bendelari**. — English Constitutional History from the Tudor period to the accession of George I. Omitted in 1890–91.]

26. Professor **Channing**. — History of American Institutions to 1783. 1 hour.
4 Gr., 1 Se. Total 5.

27. Professor **Hart**. — Constitutional development of the United States. — Discussion of Constitutional principles in connection with historical questions. 1 hour. 1 Gr., 5 Se., 2 Ju., 1 Sp. Total 9.

MUSIC.

For Graduates and Undergraduates:—

1. Professor Paine. — Harmony. 3 hours.
2 Se., 2 Ju., 3 So., 10 Fr., 1 Sp. Total 18.

2. Professor Paine. — Counterpoint. 2 hours. 1 Se., 1 Ju., 9 So. Total 11.

[3. Professor Paine. — History of Music, with analysis of the works of the great masters. Omitted in 1890-91.]

7. Professor Paine. — Instrumentation. 1 hour.
1 Gr., 3 Se., 2 Ju., 1 Sp. Total 7.

Primarily for Graduates:—

5. Professor Paine. — Canon and Fugue. 2 hours. 3 Se., 2 Ju. Total 5.

[6. Professor Paine. — Free Thematic Music. — Fugue in two voices. 2 hours. Omitted in 1890-91.]

MATHEMATICS.

Primarily for Undergraduates:—

A. Professor C. J. White. — Logarithms. — Plane Trigonometry, with its applications to Surveying and Navigation. 3 hours. 1st half-year.
4 Se., 5 Ju., 14 So., 86 Fr., 11 Sp., 12 Sc., 1 Law. Totol 133.

B. Professor C. J. White. — Analytic Geometry (elementary course). 3 hours. 2d half-year. 4 Se., 6 Ju., 7 So., 66 Fr., 8 Sp., 4 Sc. Total 95.

C. Mr. Bailey. — Analytic Geometry (extended course). 3 hours.
1 Gr., 1 Se., 2 Ju., 3 So., 9 Fr., 1 Sp., 1 Sc. Total 18.

D. Dr. Osgood and Messrs. Bailey and Love. — Algebra. 3 hours. 1st half-year. 8 Se., 8 Ju., 12 So., 52 Fr., 16 Sp., 2 Sc. Total 98.

E. Dr. Osgood and Messrs. Bailey and Love. — Solid Geometry. 3 hours. 2d half-year. 11 Se., 7 Ju., 14 So., 47 Fr., 14 Sp., 2 Sc. Total 95.

1. Professor C. J. White. — Spherical Trigonometry. — Applications of Spherical Trigonometry to Astronomy and Navigation. 2 hours. 1st half-year.
1 Gr., 1 Ju., 5 So., 4 Fr., 3 Sc. Total 14.

2. Professor C. J. White. — Differential and Integral Calculus (first course). 3 hours. 1 Gr., 2 Se., 3 Ju., 17 So., 1 Fr., 4 Sc. Total 28.

3. Mr. Love. — Analytic Geometry (higher course). 3 hours.
1 Gr., 2 Ju., 4 So. Total 7.

4. Dr. Osgood. — The Elements of Mechanics. 3 hours.
2 Gr., 3 Se., 3 Ju., 4 So., 6 Sc. Total 18.

For Graduates and Undergraduates:—

5. Professor Byerly. — Differential and Integral Calculus (second course). 3 hours. 4 Gr., 3 Se., 12 Ju., 2 So. Total 21.

12. Professor C. J. White. — The Theory of Equations. 2 hours. 2d half-year. 3 Gr., 4 Se., 2 Ju., 2 So., 1 Fr. Total 12.

[6. Professor J. M. Peirce. — Quaternions and Theoretical Mechanics. 3 hours. Omitted in 1890-91.]

7. Professor J. M. Peirce. — Higher Plane Curves. 2 hours.
3 Gr., 1 Se., 1 Ju. Total 5.

14. Dr. Osgood. — Higher Algebra (Quantics). 3 hours.
1 Gr., 2 Se., 2 Ju. Total 5.

8. Professor Byerly. — Analytic Mechanics. 3 hours.
5 Gr., 1 Se., 2 Ju. Total 8.

9. Professor J. M. Peirce. — Quaternions and Theoretical Mechanics (second course). 3 hours. 3 Gr., 1 Se. Total 4.

10. Professor Byerly. — Trigonometric Series. — Introduction to Spherical Harmonics. 2 hours. 5 Gr., 1 Se. Total 6.

13. Professor J. M. Peirce. — The Theory of Functions. 3 hours.
5 Gr., 1 Se. Total 6.

Primarily for Graduates: —

[11. Professor B. O. Peirce. — Hydrostatics. — Hydrokinematics. — Force Functions and Velocity. — Potential Functions and their uses. 3 hours.
Omitted in 1890–91.]

[16. Professor Byerly. — Problems in the Mechanics of Rigid Bodies. 2 hours.
Omitted in 1890–91.]

[17. Professor J. M. Peirce. — Analytic Geometry of Three Dimensions (advanced course). Omitted in 1890–91.]

15. Professor B. O. Peirce. — Wave Motion. 3 hours. 3 Gr. Total 3.

18. Professors J. M. Peirce, Byerly, and B. O. Peirce. — Finite Differences. — Theory of Numbers. — Calculus of Variations. — Least Squares. — Lectures by the students. 1 hour. 4 Gr. Total 4.

[19. Differential Equations (advanced course). Omitted in 1891-91.]

Courses of Research.

20 *b*. Professor Byerly. — Bessel's and Lamé's Functions. 1 Gr. Total 1.

c. Dr. Osgood. — Higher Algebra (second course). 2 hours. 2 Gr. Total 2.

ENGINEERING.

Primarily for Undergraduates: —

1. Mr. Wait. — Mechanical Drawing. — Descriptive Geometry. — Tinting, Isometric Drawing, Shades and Shadows, Perspective. 6 hours.
6 Se., 5 Ju., 5 So., 3 Fr., 14 Sc. Total 33.

2. Mr. Wait. — Surveying, Plotting, and Topographical Drawing. — Johnson's Theory and Practice of Surveying. — Geodesy. 6 hours.
1 Gr., 7 Se., 4 Ju., 5 So., 1 Fr., 1 Sp., 5 Sc. Total 24.

3. Mr. Johnson. — Stereotomy. — Applications of Descriptive Geometry. — Investigation of Arches. 2 hours. 6 Se., 1 Ju., 5 Sc. Total 12.

4. Mr. Wait. — Levelling. — Topographical Drawing. — Searle's Field Engineering. — Railroad Surveying, Location, and Construction. 6 hours.
1 Se., 5 Sc. Total 6.

For Graduates and Undergraduates: —

5. Mr. Johnson. — Graphical Statics. — Mechanics of Construction. — Building Materials, and their application to Structures. 6 hours.
4 Se., 1 Ju., 2 Sc. Total 7.

6. Professor **Chaplin**. — Applied Mechanics and Constructive Engineering. 5 hours. 4 Se., 2 Sc. Total 6.

7¹. Professor **Chaplin**. — Water Supply, and Sanitary Engineering. 3 hours. 1st half-year. 13 Se., 7 Ju., 6 So., 2 Fr., 5 Sp., 5 Sc. Total 38.

7². Professor **Chaplin**. — Practical Hydraulics and Hydraulic Engineering. 3 hours. 2d half-year.

8. Professor **Chaplin**. — Designing. — Discussions of existing structures and working out of projects. 6 hours. 4 Se., 2 Sc. Total 6.

PHYSICS.

Primarily for Undergraduates: —

A. Professors **Trowbridge**, **B. O. Peirce**, and **Hall**. — Introductory Lectures, designed especially for Freshmen, but open to all members of the University. 1 hour. 2d half-year.

B. Professor **Hall** and Mr. **Hudson**. — Experimental Physics. — Lectures (once a week) and laboratory work (two hours). 3 hours.
1 Gr., 4 Se., 5 Ju., 17 So,, 27 Fr., 6 Sp., 7 Sc. Total 67.

C. Mr. **Sabine** and Mr. **Hooper**. — Experimental Physics. — Measurements in Mechanics, Sound, Heat, Light, Electricity, and Magnetism. — Lectures and laboratory work (together six hours a week).
3 Se., 4 Ju., 16 So., 21 Fr. 2 Sp., 20 Sc. Total 66.

1. Professor **Hall**. — General Descriptive Physics. — Lectures (twice a week) and laboratory work (two hours).
4 Se., 8 Ju., 5 So., 4 Fr., 3 Sp., 10 Sc. Total 34.

3. Professor **B. O. Peirce** and Mr. **Rich**. — Electrostatics, Electrokinematics, and parts of Electromagnetism. — Lectures (once a week) and laboratory work (six to eight hours a week). 1 Gr., 1 Se., 3 Ju., 2 So., 2 Sc. Total 9.

4. Professor **Trowbridge**. — Electrodynamics, Magnetism, and Electromagnetism. — Lectures (twice a week) and laboratory work (six hours a week).
1 Gr., 2 Se., 4 Ju., 2 So., 5 Sc. Total 14.

5. Professor **Trowbridge**. — Light. — A general treatment of Optical Phenomena. — Lectures.

6. Professor **B. O. Peirce**. — Thermodynamics. 2 hours. 1st half-year.
1 Gr., 1 Se., 2 Ju., 1 Sc. Total 5.

7. Professor **Hall**. — Heat Engines: the theory of their action and the principles of their economical operation, with practice in managing and testing them. — Lectures and laboratory work (six hours a week). 2d half-year.
1 Gr., 1 Se., 2 Ju., 1 Sc. Total 5.

8. Professor **Hall**. — Dynamos: the theory of their action and the principles of their economical operation, with practice in managing and testing them. — Lectures and laboratory work (six hours a week). 1st half-year.
1 Se., 2 Ju., 1 Sc. Total 4.

Primarily for Graduates: —

[9. Professor **B. O. Peirce**. — The Mathematical Theory of Electrostatics and Electrokinematics. Omitted in 1890-91.]

[10. Professor **Hall**. — The Mathematical Theory of Electrodynamics and Electromagnetism. Omitted in 1890-91.]

COURSES OF RESEARCH.

0. (*a*) Professor COOKE. — Determination of Atomic Weights. 2 Gr.
(*b*) Professor JACKSON. — Aromatic Compounds. 1 Gr.
(*c*) Professor H. B. HILL. — Organic Chemistry. 3 Gr.
[(*d*) Professor JACKSON. — Inorganic Chemistry. Omitted in 1890–91.]
(*e*) Professor COOKE and Dr. HUNTINGTON. — Mineralogy. 1 Gr.
Total 7.

BOTANY.

rimarily for Undergraduates : —

1. Mr. GANONG. — Botany. — Lectures and laboratory practice. 3 hours. 2d half-year. 1 Gr., 17 Se., 18 Ju., 41 So., 49 Fr., 16 Sp., 11 Sc. Total 153.

2. Professor FARLOW. — Morphology of Plants. — Lectures and laboratory work. 3 hours. 1st half-year.
1 Gr., 10 Se., 5 Ju., 13 So., 2 Fr., 1 Sp., 3 Sc. Total 35.

or Graduates and Undergraduates : —

3. Mr. GANONG. — Botany (second course). — Lectures and laboratory practice. 2 hours. 3 Gr., 3 Se., 3 Ju., 1 So., 1 Fr., 1 Sp., 1 Sc. Total 13.

4. Professor FARLOW. — Cryptogamic Botany. — Lectures and laboratory work. 3 hours. 2d half-year. 5 Gr., 3 Se., 1 Ju., 2 So., 1 Sc. Total 12.

rimarily for Graduates : —

COURSES OF RESEARCH.

20*a*. Professor GOODALE. — Experimental Vegetable Physiology. — Systematic and Economic Botany. Omitted in 1890–91.]

0*b*. Professor FARLOW. — Structure and Development of Cryptogams. — Laboratory work. 7 Gr., 1 Sc. Total 8.

ZOÖLOGY.

rimarily for Undergraduates : —

1. Professor MARK. — Zoölogy. — Lectures and laboratory demonstrations. 3 hours. 1st half-year.
2 Gr., 13 Se., 8 Ju., 22 So., 21 Fr., 11 Sp., 12 Sc. Total 89.

2. Mr. G. H. PARKER. — Morphology of Animals. 3 hours. 2d half-year.
1 Gr., 9 Se., 4 Ju., 12 So., 3 Fr., 1 Sp., 4 Sc. Total 34.

or Graduates and Undergraduates : —

3. Mr. G. H. PARKER. — Comparative Anatomy of Vertebrates. — Lectures and laboratory work. 3 hours. 4 Gr., 7 Se., 6 Ju., 3 Sc. Total 20.

4. Professor MARK. — Microscopic Anatomy. — Lectures and laboratory work. 3 hours. 1st half-year. 5 Gr., 1 Ju., 3 Sc. Total 9.

5. Professor MARK. — Embryology of Vertebrates. — Lectures and laboratory work. 3 hours. 2d half-year. 6 Gr., 1 Ju., 2 Sc. Total 9.

rimarily for Graduates : —

0. Dr. SLADE. — Comparative Osteology. 1 hour. 2 Sc., 1 Ju. Total 3.

COURSES OF RESEARCH.

0*a*. Professor MARK. — Anatomy and Development of Animals.
8 Gr., 1 So. Total 9.

20*b*. Professor HAGEN. — General Entomology. Omitted in 1890–91.]

The revision of the list of courses preparatory to the announcement of instruction for 1891–92 developed but little need for change in the great body of the courses, or in the classification of them which had been adopted recently. The appointment of Assistant Professor Marsh made it possible to offer a course on the History of Classical Learning in Europe from the Fifth Century to the Fifteenth, exhibiting the relation of modern to ancient culture; and another course on Comparative European Literature in the Middle Ages, with special reference to France and her influence. The addition of Mr. Edward Cummings to the Department of Political Economy gave opportunity for the establishment of a course, to be conducted by him, upon Sociology and the Development of the Social Functions of the Modern State. Professor Emerton's courses on the First Eight Christian Centuries and on the Era of the Reformation were restored to the list of courses in History, and a course to be given by him on the Middle Ages, from Charlemagne to Dante, was established. The Faculty also authorized a course of special training in American Archaeology and Ethnology to be given by Professor Putnam, to require three years for its completion and to be carried on by work in the Peabody Museum together with lectures and field work, and in the third year to include some special investigation. The increased interest in archaeological study and the liberal aid which has been given for the encouragement of students has finally made it possible to use the Museum and its rich collections in the training of qualified students for original research, and thus to multiply the usefulness of this noble foundation. The course now established, being a long system of training and not the examination of a definite and limited portion of a field of study, such as is implied in our customary use of the term, is set down to be taken by graduates and may be made the ground for conferring the higher degrees administered by this Faculty.

Attention should also be called to other new courses, established for the year 1891–92, as follows: —

History of Latin Literature. *Three hours.* Professor SMITH.

General Introduction to Classical Philology. *Three hours, first half-year.* By Instructors in the Classical Department.

Literary Criticism in England since the Sixteenth Century. *One hour.* Mr. FLETCHER.

German Prose (advanced course). Subjects in history, literature, and philosophy. *Two hours.* Professor SCHILLING.

The Faust Legend from Marlowe to Goethe. *One hour.* Professor FRANCKE.

Chemical Philosophy. *One hour.* Dr. RICHARDS.

While the Faculty was engaged in preparing the list of courses of instruction to be provided for the year 1891–92, it found itself called upon to consider the conditions under which courses given during the counted for the degree will have the signal advantage, considered as regular courses of instruction, of enabling students to carry on important work, especially in the Natural Sciences and in Engineering, at the best season of the year, and with such freedom in the choice of place as is impossible for either student or instructor in the ordinary working year of the University.

The general scheme of the courses adopted by the Faculty calls in most cases for about six weeks of daily attendance, with a large amount of laboratory or field work, and the value of the work, as has often been shown, is much heightened by the interest and animation due to concentrated daily attention to only one or two subjects. It is not to be assumed that the students would find equal profit from this method in all subjects. Upon many studies it is no doubt difficult to secure a firm hold without a certain time for reflection and for gradual assimilation, and some caution may be needed, then, in extending this arrangement to untried branches of work. So far as it can be carried safely, it promises to secure increased use for a part of the valuable scientific equipment and libraries of the University during a part of the year when the old division between term and vacation would keep them idle; and it also gives to the students the optional use, to a limited extent, of the long vacation. This fraction of the year has long been felt to be too important to be neglected, but the different needs of individuals, as well as the habits of a large part of the community, have stood in the way of any method of dealing with it so far proposed. The result of the present experiment of enabling earnest students in vigorous health to use, if they will, a part of the leisure time of the year in such studies as can then be pursued with the best advantage, must be observed with great interest.

The Faculty also by special vote recognized the following laboratory courses, given in the Medical School for graduate students in Medicine, as suitable for students in the Graduate School: —

Experimental Physiology, by Dr. BOWDITCH.
Anatomy, by Dr. DWIGHT.
Bacteriology (a Summer course), by Dr. ERNST.
Embryology of Vertebrates, by Dr. S. C. MINOT.

The bearing of these courses upon work carried on by some of the graduate students in Biology led the Faculty in this instance to make an unusual exception to its general practice with respect to work in Law and Medicine, and the exception was more easily made because in the case of graduate students the practical difficulties in the way of admitting for a degree work not done under the jurisdiction of the Faculty itself are obviously far less serious than in the case of undergraduates.

CHARLES F. DUNBAR, Dean.

	October, 1890.	Loss.	Gain.	October, 1891.
Class of 1892 . .	(Juniors) 254	25	52	(Seniors) 281
Class of 1893 . .	(Sophomores) 290	39	50	(Juniors) 301
Class of 1894 . .	(Freshmen) 367	70	36	(Sophomores) 333
		134	138	
Net gain in the three classes between October, 1890, and October, 1891 . . 4				

The next table is a detailed statement of the losses and the gains in these three classes: —

	Class of 1892.	Class of 1893.	Class of 1894.	Total for three Classes.
Losses.				
Left College before the end of the year . .	7	8	13	28
Left College at the end of the year	7	9	7	23
Were "dropped" and left College	2	1	3	6
Entered a lower class	3	6	25	34
Entered a higher class	6	15	22	43
Total loss	25	39	70	134
Gains.				
From higher classes	3	3	6	12
From lower classes	14	23	. .	37
Newly admitted	35	24	30	89
Total gain	52	50	36	138
Net loss	. .	. .	34	. .
Net gain	27	11	. .	4

Death accounts for the loss of one Junior and one Freshman; College discipline for the loss of one Junior, four Sophomores, and six Freshmen. Of the students removed to higher classes two entered the Medical School and two the Law School, with the intention of taking the degree of A.B. in 1892; twenty-five were restored to their original classes, from which they had been "dropped." Of the newly admitted, sixty-two were admitted by the Committee on Admission from Other Colleges — thirty-one as Seniors (Class of 1892), twenty as Juniors, and eleven as Sophomores. Three Special Students and one Scientific Student were admitted to the Senior class; four Special Students to the Junior; twelve Special Students and three Scientific Students to the Sophomore. Four of the newly admitted Sophomores of the office business. No one has served the College with a conscience more vigilant or an unselfishness more devoted. At the first meeting of the Faculty of Arts and Sciences after the resignation of Miss Harris, Professor Norton offered the following resolution, which was unanimously adopted: —

"That the Faculty of Arts and Sciences desire to put on record their sense of the value of the long and faithful services of Miss Charlotte M. Harris."

Four hundred and three candidates (twelve more than in 1890) took Final Examinations for admission to College in 1891. Of these, two hundred and sixty-eight had taken Preliminary Examinations in a preceding year; eighty-nine (thirty-two more than in 1890) divided the examinations between June and September; and forty-six took all their examinations in either June or September. The number of candidates who adopted each of the four plans of admission may be learned from the following table: —

Plan (*a*): All the Elementary Studies and at least two Advanced Studies; fifteen[*] hours of examination	161
Plan (*b*): All the Elementary Studies except either German or French, and at least three Advanced Studies; sixteen hours of examination	211
Plan (*c*): All the Elementary Studies except either Greek or Latin, and at least four Advanced Studies, including Advanced Mathematics; seventeen hours of examination	27
Plan (*d*): All the Elementary Studies except either German or French and either Greek or Latin, and at least five Advanced Studies, including Advanced Mathematics; eighteen hours of examination	4
	403

For every departure from Plan (*a*) the candidate pays double; if he omits the one hour of examination in Elementary German or French, he substitutes two hours of examination in some advanced study; if he omits the two hours of examination in Elementary Greek or Latin, he substitutes four hours of examination. Moreover, one of the substitutes for Greek or Latin must be Advanced Mathematics, and the other either Advanced Mathematics or Advanced Physical Science. In view of these facts, it is not surprising that few candidates elect either Plan (*c*) or Plan (*d*). The most potent cause of such an election is either dread of Greek or inability to get instruction in Greek. Of the four plans of admission, Plan (*b*) is still the most popular; but this year Plan (*a*) has gained a little at the expense of Plan (*b*).

Among alternative requirements, German is gaining on French, and Experimental Physics on Descriptive. The relative popularity of Ancient and Modern History remains unchanged.

---

[*] The examination in English (required of every candidate) occupies an hour and a half, but counts for one hour only.

the same as in 1890. It is worth noting, also, that the number of candidates in Advanced Greek increases; and that in both Latin and Greek Composition even the percentage is larger for 1891 than for 1890.

The next table gives the percentage of failure in each of the studies offered at the examinations for admission: —

	1888.	1889.	1890.	1891.
ELEMENTARY STUDIES.				
English	15	17	12	14
Greek	3	6	9	6
Latin	3	5	3	2
German	10	11	12	13
French	14	12	11	11
History (Ancient)	5	7	6	11
" (Modern)	3	13	18	10
Algebra	22	28	11½	10
Plane Geometry	21	13	17	17
Physical Science (Descriptive)	16	15	23	25
Physics (Experimental)	15	14	14	9
ADVANCED STUDIES.				
Greek	19	20	10	8
Latin	9	17	27	24
Greek Composition	16	12	17	23
Latin "	26	17	23	23
German	21	17	18	31
French	23	23	24	20½
Logarithms and Trigonometry	71	32	40	33½
Solid Geometry	19	23	31	16
Analytic Geometry	33	33	37½	22
Mechanics or Advanced Algebra *	73	64	45½	37
Physics	22	100	11	80
Chemistry	5	0	0	7

It will be borne in mind that these figures tell merely what per cent of the candidates who have offered this or that study at either the Preliminary or the Final Examinations have failed in it at the Final; and that, for the purposes of this table, the record of the Preliminary Examinations is a record of solid success. Thus the percentage of failure in studies which, like Elementary Greek and Latin, are usually offered at the Preliminary Examinations becomes conspicuously small. In 1888, for example, though twenty-four per cent of the Preliminary candidates in Elementary Greek were conditioned and seven per cent

---

* In 1891, Advanced Algebra only.

In 1891, though the number of certificates for less than five hours was unusually large, the number of failures was nearly double what it was in 1890. If the proportion of failures in 1888 had not been larger yet, the figures would seem to indicate a waning sensitiveness of conscience in some of the teachers who give their pupils certificates of preparation.

No report on admission is complete without some account of the work of the Committee on Admission from Other Colleges. To this committee the Faculty has delegated with full power the admission without examination, or with only partial examination, of the many students attracted every year from other colleges to our own. The classification of these students depends in part on the standing of the colleges from which they come, in part on their standing in those colleges. Many Bachelors of Arts — some of whom might enter our Graduate School — are admitted to the Senior class, many to the Junior class: and undergraduates of other colleges are distributed among our classes, each man getting from the committee his special terms of admission. No better way of dealing with this important body of students has yet been devised; and, in spite of obvious risks, the result of this method of admission has proved the wisdom both of the method and of the committee. In 1891 the number of recruits supplied by this committee was seventy-three.

Such students have, as a rule, no serious difficulty in discovering what College courses they are qualified to pursue. Not so the Special Students. They too are admitted with incomplete examination; and they work under the constant supervision of the committee that admits them. This committee does its best to improve the quality of our Special Students without denying to any industrious man admission to such College courses as he may take with profit. Yet many Special Students mean in time to work their way into regular standing; and for this reason, if for no other, ask admission to the courses prescribed for Freshmen. One of these courses, "English *A*," is designed for students who have had a good deal of training in the subject, and have shown, by examination, their fitness for the course. It is not, and should not be, designed for those who, like many of our Special Students, have passed no examination in English and have had little or no training in English Composition. To debar such men from the most elementary course that the College offers in the study of their mother-tongue, is ungracious; yet they are not fit for the teaching that legitimate members of the course demand. Their written work claims more than a fair share of the instructors' time; they fail in their examinations; they are a disappointment to them with two exclusions of Scientific students, make up the record of the year.

Uniformity of practice in the use of this penalty is much to be desired. At present, every instructor puts his own interpretation on the rule of the Faculty; and the delicate job of mutual adjustment is left to the Dean. In my opinion, the penalty should be employed very rarely. It has the radical defect of giving to a student who already does little the opportunity to do less. The fear of it is stimulating; but the penalty itself, like hanging, is most helpful to the men on whom it is not inflicted. No doubt a student excluded from one course may be made to feel that, unless his work in other courses promptly improves, he shall be put on probation; moreover, he must take, at some time, besides his regular work, the equivalent of the course from which he has been excluded; but, for the time being, his work is nominally diminished. For this reason, an instructor would do well not to resort to exclusion except with students whose record is hopeless, and whose presence in the course — or absence from it — is demoralizing.

The year 1890–91 was the first year of the existence of the Administrative Board of Harvard College. This large executive committee of the Faculty of Arts and Sciences consists of fifteen members besides the chairman, the Dean of Harvard College. The members for 1890–91 were: —

CLEMENT L. SMITH, LL.D., *Professor of Latin*, Dean.
CHARLES E. NORTON, LITT.D., LL.D., *Professor of the History of Art.*
CHARLES J. WHITE, A.M., *Professor of Mathematics.*
GEORGE H. PALMER, A.M., *Professor of Philosophy.*
JOHN TROWBRIDGE, S.D., *Professor of Physics.*
GEORGE A. BARTLETT, *Assistant Professor of German.*
WILLIAM M. DAVIS, M.E., *Professor of Physical Geography.*
WILLIAM E. BYERLY, PH.D., *Professor of Mathematics.*
CHARLES R. LANMAN, PH.D., *Professor of Sanskrit.*
ADOLPHE COHN, LL.B., A.M., *Assistant Professor of French.*
SILAS M. MACVANE, A.B., *Professor of History.*
FREEMAN SNOW, PH.D., *Instructor in International Law.*
JOHN H. WRIGHT, A.M., *Professor of Greek.*
OLIVER W. HUNTINGTON, PH.D., *Instructor in Mineralogy and Chemistry.*
MORRIS H. MORGAN, PH.D., *Tutor in Greek.*
GEORGE L. KITTREDGE, A.B., *Assistant Professor of English.*

The delegation of power to the Administrative Board came none too soon. The Faculty, too big to handle little things, wasted an unconscionable amount of time in vain attempts to handle them. By taking charge of the details of College government, the Board left the Faculty free to discuss those larger questions that rightfully belong to power of closing probation had been delegated to the Board. Ten days later the Board received the following answer: —

> "*Voted*, on the motion of the Dean of Harvard College, to delegate with full powers, until further order of this Faculty, to the Administrative Boards of the Graduate School, the College, and the Scientific School respectively, the enforcement of the regulations of the Faculty relating to each of those departments, and the conduct of all ordinary matters of regulation and discipline.
>
> "*Voted*, that this Faculty delegate to each of the Administrative Boards the power to close the probation of any student of the department under its charge, who is now on probation or who may hereafter be put on probation by vote of that Board, or under the operation of the Regulations; provided, however, that such action shall be taken only by a vote of two thirds of the members of such Board present and voting.
>
> "*Voted*, also, that the name of any student whose probation has been closed under the foregoing vote shall be reported to the Faculty at its next meeting."

Thus the Board gained control of ordinary discipline and of one of the penalties that cut off a student from the College. Another of these penalties, suspension, came into its hands, as a natural consequence of the power to close probation, since suspension involves only a limited separation from the College. The closing of probation is practically dismissal: a student whose probation has been closed may be readmitted, but only by special vote; the same is true of a student dismissed. In either case, the burden of proof in the question of readmission rests on the man himself; he must show himself worthy of the confidence or the mercy of that governing body to which he appeals. Dismissal, however, and the one far-reaching and irrevocable penalty — expulsion — are still in the hands of the Faculty. Expulsion, which cuts a student off, for all time, not only from Harvard College but from other colleges holding courteous relations with it, should be inflicted by the largest of the governing boards; and dismissal should be left to the same body for cases not grave enough to justify expulsion.

The present relation of the Board to the Faculty in matters of discipline is expressed by a vote of the Faculty, read to the Board on December 5, 1890: —

> On Tuesday, November 25, 1890, the Faculty of Arts and Sciences passed the following regulation, which is respectfully communicated to the Administrative Board of Harvard College.
>
> "Cases of discipline shall be acted upon by the Administrative Boards of the Graduate School, Harvard College, and the Lawrence Scientific School, respectively; and their action shall be final, except in such cases as in their judgment should be punished by expulsion

For these the Faculty substituted, —

AMENDMENT TO THE REGULATIONS

Adopted May 26, 1891, to be substituted for §§ 14 and 15.

14. A student is allowed to anticipate college studies, by passing, at the time of his admission, a creditable examination in any of the studies intended primarily for undergraduates.

15. Studies anticipated in accordance with § 14 may be counted towards the degree in the manner herein provided: —

(1) If the studies anticipated amount to one half of the work of the Freshman year, the student may, upon application, be admitted to the Sophomore class, subject to the condition of making up the deficiency in his Freshman year studies, in accordance with § 6.

(2) In any case the studies anticipated shall be placed to the student's credit, and may be used towards satisfying the requirements for the degree of Bachelor of Arts, in either of the following ways: —

(*a*) The student may obtain leave from the Administrative Board to fulfil the requirements for the degree in three years by taking additional elective studies under the provisions of § 5.

(*b*) The number of courses regularly required in the Senior year, or in the Senior and Junior years, may be reduced by the amount of the studies anticipated. Permission to make such reduction will be granted, however, only for the purpose of enabling the student to devote time thus gained to his remaining studies, or to studies in a professional school.

Applications under (*a*) and (*b*) will not ordinarily be acted upon until the close of the student's first year; and the decision upon them will depend upon the quality of the student's record both in his examination for admission and in his college work.

The Amendment differs from the old regulations: —

First, in allowing a student to anticipate at the time of his admission not merely Freshman studies but any studies intended primarily for undergraduates.

Secondly, in emphasizing the possibility of his gaining a year at the outset.

Thirdly, in suggesting that, through the aid of studies anticipated, he may divide his fourth year between the College and one of the professional schools.

Fourthly, in promising that "in any case the studies anticipated shall be placed to the student's credit" — a promise that means little unless the studies are counted as part of the requirements for the bachelor's degree.

In regard to what I have called the fourth point of difference, it may be said that the old regulation gives a student the right to count anticipated studies toward his degree in either of two ways, "if he see fit." Yet the old regulation proceeds to make clear that, if he is to count them in the more important of the two ways, it is not students of this School, and that the work in this subject may be entered to their credit.

The instruction in the use of tools is still given at the Cambridge Manual Training School, where our students receive every possible attention and consideration from the efficient superintendent, Mr. Harry Ellis. Until such time as the number of students who are required to take this instruction becomes too large to be accommodated in the Manual Training School, this arrangement is probably the most expedient for the School; but I must again point out that the School is increasing in numbers so rapidly that provision must soon be made for giving this instruction inside our walls.

The need of a workshop for electrical engineering has been most kindly recognized and met by a gift of $10,000 from Mrs. Benjamin S. Rotch. With this sum it is expected that a substantial and convenient shop will be built and equipped, sufficient to supply the present requirements. It has been so planned that it can be extended in the future as may be necessary.

It is time, perhaps, to make some remarks on the new organization which was introduced a year ago, by which the School was placed under the control of an Administrative Board, which is itself subordinated to the Faculty of Arts and Sciences. The Administrative Board of this School has worked most harmoniously, and the regular attendance of its members at the meetings has been in marked contrast with the attendance of the Faculty which controlled the School before the reorganization. So far, then, as can be judged from the experience in this School, I regard the present organization as an improvement on the one which it replaced.

The system of prescribed group-courses, which is the system followed in this School, is defensible only when the number of courses is so great as to fairly meet the needs of the public. It will be good policy, therefore, to multiply the courses as rapidly as circumstances will allow. At present the courses are those of Civil Engineering, Chemistry, Geology, Biology, and Electrical Engineering. It is hoped that a course in Anatomy, Physiology, and Physical training will be added in 1892–93. The courses which would naturally be the next to be established are Architecture and Mechanical Engineering. Of these two courses, that in Architecture could be established at comparatively small cost, while that in Mechanical Engineering will require a large expenditure.

W. S. CHAPLIN, *Dean*.

CAMBRIDGE, 30 September, 1891.

In addition to the students registered in the Graduate School, the Catalogue for 1890–91 contains the names of thirty-one bachelors or masters of arts, science, letters, or philosophy, in the Senior Class of Harvard College, four in the Junior Class, and one in the Sophomore Class; making thirty-six graduates in all, registered in undergraduate classes.

The number of students in the Graduate School admitted to the degrees of A.B., A.M., Ph.D., and S.D., and the number of students in other departments of the University admitted to the degree of A.M., at Commencement, 1891, is shown in the following table: —

Graduate students admitted to A.B.	7	
Graduate students admitted to A.M.	36	
Graduate students admitted to Ph.D	7	
Graduate students admitted to S.D.	1	51
Seniors admitted to A.M., with A.B.	2	
Professional students admitted to A.M. on special courses of study	5	
Professional students admitted to A.M. with a professional degree	31	38
Total of the above list		89
Deduct Graduate students admitted to A.B.		7
Total number admitted to A.M., Ph.D., or S.D.		82

Those admitted to the degrees of A.M., Ph.D., and S.D. may also be classified as follows: —

Harvard Bachelors of Arts or Science, or persons receiving A.B. at the same time, not also graduated elsewhere	58	
Harvard Bachelors of Arts or Science, also graduated elsewhere	6	
Students not Harvard Bachelors of Arts or Science	18	82

The following are the names of the students admitted to the degree of *Doctor of Philosophy and Master of Arts* or to the degree of *Doctor of Science*: —

To Ph.D.

Herman Vandenburgh Ames, A.B. (*Amherst Coll.*) 1888, A.M. (*Harvard Univ.*) 1890; in History and Political Science (American History).

George Aaron Barton, A.B. (*Haverford Coll.*) 1882, A.M. (*Ibid.*) 1885, A.M. (*Harvard Univ.*) 1890; in the Semitic Languages and History.

Herbert Haviland Field, A.B. 1888, A.M. 1890; in Natural History (Zoölogy).

Fred Emory Haynes, A.B. 1889, A.M. 1890; in History and Political Science (American History).

John William Henry Walden, A.B. 1888, A.M. 1889; in Ancient Languages (Classical Philology).

William McMichael Woodworth, A.B. 1888; in Natural History (Zoölogy).

Theodore Francis Wright, A.B. 1866, A.M. 1869; in Philosophy (Metaphysics).

To S.D.

George Howard Parker, S.B. 1887; in Natural History (Zoölogy).

Morgan Fellowship, G. J. O. Pfeiffer, Diploma (*Zürich Polytechnicum*) 1886, PH.D. (*Univ. of Zürich*) 1887, (*first year*), studying *Chemistry*; in place of J. Torrey, Jr., who resigned at the beginning of the year to accept an assistantship.

" " W. L. Phelps, A.B. (*Yale Univ.*) 1887, (*first year*), studying *English*; appointed early in the year 1890–91.

" " L. M. Underwood, PH.B., (*Syracuse Univ.*) 1877, PH.D. (*Ibid.*) 1879, Professor of Natural History in Syracuse University, (*first year*), studying *Botany*.

" " H. B. Ward, A.B. (*Williams Coll.*) 1885, (*first year*), studying *Zoölogy*.

Henry Lee Memorial Fellowship, T. E. Will, A.B. 1890, (*first year*), studying *Political Science*.

Ozias Goodwin Memorial Fellowship, H. V. Ames, A.B. (*Amherst Coll.*) 1888, A.M. (*Harvard Univ.*) 1890, (*first year*), studying *American History*.

Henry Bromfield Rogers Memorial Fellowship, W. E. B. DuBois, A.B. (*Fisk Univ.*) 1888, A.B. (*Harvard Univ.*) 1890, (*first year*), studying *Ethics in its relations to Sociology*.

At the close of the academic year Mr. Ames was admitted to the degree of Ph.D. at this University; Mr. Bôcher to the degree of Ph.D. at Göttingen; and Messrs. DuBois, Phelps, and Will to the degree of A.M. at this University. Messrs. Ames, Bôcher, Cummings, Currier, Edes, Foerste, Haley, Jackson, Lloyd, Pfeiffer, Phelps, Shea, Underwood, and Will withdrew from their fellowships at the close of the academic year. Drs. Bôcher, Haley, and Pfeiffer, and Messrs. Cummings and Phelps have received appointments as instructors or assistants at this University; Dr. Ames and Messrs. Currier, Lloyd, and Will have received appointments at other institutions; Professor Underwood has returned to the chair of Natural History at Syracuse University; Dr. Foerste and Mr. Shea are continuing their studies in Europe; Dr. Jackson has an important professional position in New York; and Mr. Edes has entered the Medical School of this University.

The appointments to fellowships for the academic year 1891–92 are as follows: —

Mr. Miller was transferred from a Morgan to the Walker fellowship, but with the understanding that he would continue his studies as a resident student; Mr. Williams was transferred from the Kirkland to a Parker Fellowship; Messrs. DuBois Gray, Hale, and Ward were reappointed to the same fellowships they held in 1890–91; and the following new appointments were made: —

Non-Resident Fellows.

Rogers Fellowship, John William Henry Walden, A.B. 1888, A.M. 1889, PH.D. 1891, now studying *Classical Philology* at Berlin.

students is forty-six, varying in annual income from $300 to $150, and aggregating $10,450.

Besides the above-named fellowships and scholarships, two foundations are administered outside of the University for the benefit of Graduate students. These are the Hemenway Fellowship and the Scholarship of the Harvard Club of San Francisco.

The Hemenway Fellowship was presented by Mrs. Mary E. Hemenway, at the close of the year 1889–90, to the trustees of the Peabody Museum of American Archaeology and Ethnology, to be awarded annually to a student in that department of study pursuing his studies in the Graduate School of the University. This fellowship was held in the year 1890–91 by Mr. John Gundy Owens, who was reappointed at the end of the year for the year 1891–92.

The Scholarship of the Harvard Club of San Francisco was established by that club in the year 1886–87. This scholarship is annually awarded by the club to a graduate of the University of California pursuing, or intending to pursue, his studies in the Graduate School of this University, and the appointment is made on recommendation of the Faculty of the University of California, or in consultation with that Faculty. This foundation is an interesting example of the valuable services which are in many ways rendered to the University by the Harvard Clubs throughout the country. The scholarship was held in the two years 1887–88 and 1888–89 by Mr. Adolph Caspar Miller, a student of Political Economy, who received the degree of A.M. at this University in 1888, and has since 1889 been an instructor in Political Economy at this University, at the University of California, and (now) at Cornell University. It was held in the two years 1889–90 and 1890–91 by Mr. William Emerson Ritter, a student of Zoölogy, who received the degree of A.M. at this University in 1891, was an Assistant in Zoölogy in 1890–91, and is now an Instructor at the University of California. It is held during the current year by Mr. Archie Burton Pierce, a student of Mathematics.

The number of candidates applying in the spring of 1891 for fellowships and scholarships to be held in the Graduate School during the academic year 1891–92 was one hundred and eighty, of whom thirty-four were candidates for reappointment. This number exceeded the corresponding number in the preceding year by seventy-three, an increase of more than two thirds. Thirteen additional applicants presented themselves at the beginning of the current academic year, making one hundred and ninety-three applicants in all. But a small number of applicants ultimately withdrew from competition on account of having received appointments to instructorships or assistantships

The subjoined table presents a classified enumeration of the applicants for fellowships and scholarships and of the persons who received the appointments: —

	Applicants.	Appointees.
Students of Philology	45	18
Students of Philosophy, History, and Political Science	59	20
Students of Mathematics, Physics, and Chemistry	41	15
Students of Natural History	30	12
Students in other branches, or proposing mixed courses, or without statement of purpose	18	0
	193	65
Members of the Graduate School	53	28
Members of the Senior Class	37	15
Members of Professional Schools	3	0
Former students in some department of the University	19	4
Persons never connected with the University	81	18
	193	65
Harvard A.B.'s, S.B.'s, A.M.'s, Ph.D.'s, and S.D.'s, not also graduated elsewhere	32	16
Harvard A.B.'s, S.B.'s, A.M.'s, Ph.D.'s, and S.D.'s, previously graduated elsewhere	12	5
Graduates of other institutions, and not of Harvard University	104	31
Harvard Seniors not already graduated elsewhere	23	9
Undergraduates of other institutions and other non-graduates	22	4
	193	65

Among the subjects which occupied the attention of the Administrative Board of the Graduate School during the year 1890–91 may be mentioned two proposed changes, namely: the required publication of Doctors' Dissertations, and the assignment of some of the College rooms to Graduate students. It has been a rule of the Graduate Department that students attaining the degree of Ph.D. or S.D. are permitted to print their theses, with the certificates of their having been approved for the degree; and also that in all cases a written or printed copy of the thesis must be deposited in the College Library and be open to public inspection. But the publication of the thesis is one of the required conditions of the degree in most German and several American universities, and this requirement is generally regarded as tending to ensure the maintenance of a high standard of scholarship and ability for the degree. After a full discussion of the subject the Administrative Board felt unable to recommend to the Faculty the adoption of a rule which would impose a heavy pecuniary burden upon persons receiving a doctorate. In some departments of study the publication is, indeed, easily provided for through recogroutine-work or elementary teaching as to lose a great deal of the time and the spirit which they need for advanced investigation or reading. The Board have thus far dealt with these cases individually, according to their best judgment of their merits. But it is greatly to be hoped that enquiries embracing this subject, which are now referred to a special committee of the Faculty, may lead to a clear and satisfactory general solution of the perplexing question here indicated.

Twenty years have now passed since the adoption by the Corporation and Overseers of the Standing Rules under which the degrees of Master of Arts, Doctor of Philosophy, and Doctor of Science are given by this University. The first meeting of the Academic Council, as revived for the purpose of administering these rules and of the supervision of candidates, and for other purposes, was held on the 30th of January, 1872; and the degree of A.M. was given without examination for the last time at the following Commencement. The catalogue for 1872–73 contains the names of fifteen students intending to apply for the new degrees, some of these having been in fact Graduate students in the preceding year; and the degree of Ph.D. or S.D. was conferred on three candidates at Commencement, 1873. It cannot be regarded as premature to raise the enquiry now whether experience points to any needed amendments in the system under which we have lived so long.

In regard to the degrees of Ph.D. and S.D., I feel no doubt that such enquiry would lead to the conclusion that the standards of attainment and ability for those degrees have been in the main well chosen and satisfactorily maintained. The degrees have never been allowed to rest on any mere computation of time or of courses, on any consideration of rights acquired by faithful compliance with regulations, or on any other mechanical grounds whatever. The prominence given to the thesis as a foundation of these degrees has proved to be a valuable safeguard of their quality and significance. Their value can be maintained, indeed, only by ever-continuing vigilance and unsparing criticism on the part of the several committees charged with their administration. But for the past it may safely be said that if we should now pass in review the claims of all the persons on whom the degrees have been conferred since 1872, we should find few, if any, cases in which we should now question the soundness of the award or its distinct creditableness to the University as a seat of learning.

Two questions connected with the interpretation of the requirement of residence may, however, be suggested for consideration. The first of these questions is, how far study in the graduate department of

A.M. was a great advance on this discreditable condition of things, for which the only excuse was that it had existed for a time beyond the memory of any man then living. The requirement adopted in 1872 was then felt to be as severe as the sentiment of a generation which attached little value to the degree of A.M. would bear; and at the same time to be the slightest that could worthily be imposed. It was one year of residence and study in approved courses, additional to the residence and study required for A.B. Sometime later the Academic Council voted that they would approve for A.M. only courses of *advanced grade*, and that the examinations must be passed with *high credit*. These conditions still exist and have a wholesome influence on the character of the degree, although the Administrative Board find the interpretation of the first of them beset with some difficulties. But it must be confessed that a degree resting on a single year of study, which has in some cases no definite character, must be a degree of low significance. Moreover, some students are now able to take the degree at the same time with that of A.B., and many more have done at graduation a part of the work which might be accepted for A.M. It seems, therefore, that the time is approaching when it will be desirable either to raise the conditions on which this degree rests or to place it frankly in the position of only a higher form of the degree of A.B. If the requirements for the degree of A.M. were so raised that they would normally necessitate from ordinary candidates *two* years of study in addition to the study for A.B., but would render it easy, or fairly possible, for many of our own best graduates and for some of those who come to us from other colleges to take the degree in one year by counting extra work already done, not required by the earlier degree, and by choosing and pursuing successfully courses of study of distinctly advanced grade, it seems to me that a far sounder and more creditable basis for the degree would be established than now exists, and at the same time one which it would be within our power at the present time, and with the present interest in graduate study, to adopt and maintain; and also that our relations to other colleges in regard to the degree would thus be greatly improved. No conflict would thus arise with the degree of Ph.D.; for that degree, as has been already remarked, rests on far higher considerations than a mere counting of time and courses; and, moreover, it is very common for a candidate for either of the doctorates to continue his studies, before coming up for the degree, through three, four, or even five years.

The alternative change suggested above is that of lowering the standard of the degree of A.M. so as to make it effectively an Honor Degree of A.B. A more emphatic separation than now exists be-

Eleven Theological Seminaries were represented, as follows: —

Andover	1
Bangor	1
Canton	1
Doshisha	1
Harvard	1
Hillsdale	1
Meadville	5
Pacific	1
Tufts	1
Union	1
Yale	3

The discrepancy between these figures and the number of Resident Graduates given above is caused by the fact that certain members of the Middle and Senior Classes had already graduated at theological schools.

Twenty-one Colleges and Universities were represented, namely: —

Adrian	1
Amherst	1
Antioch	2
Bates	1
Colby	2
Denver	1
Doshisha	2
Harvard	9
Illinois Wesleyan	1
University of Iowa	1
Johns Hopkins	1
Mt. Allison	1
College of New Jersey	1
Olivet	1
St. Stephens	2
Trinity (N. C.)	1
Tufts	1
Washington State University	1
Washington (St. Louis)	1
University of Wisconsin	1

Six students graduated from the School of whom three received the degree of A.M. with that of B.D. Three took the degree of A.M. for a year's work in the School. There were 170 elections of studies which were originally merely Divinity School courses, by far the largest number (110) being in connection with Professor Peabody's course on "The Ethics of Social Questions." An interesting feature of the Commencement exercises was the representation of the Divinity School by a Japanese member of the Graduating Class — the first of his nationality to receive a degree from this University.

The figures that have been given show that teaching the graduates forms an increasing element in the work of the School and make it evident how imperfectly this work is represented by the number of the Graduating Class. While this class numbered only six, twenty-nine men, who had been under the instruction of the School taking complete or partial courses for a whole or a part of the year, left during the year, twenty-four of them at the end of the year. Two of these left with the purpose of returning and completing their course. The fact that

Prof. Thayer	Lectures on our English Bible and its recent Revision. — Lectures on topics in Biblical Theology. — Exposition of Difficult Texts. — Essays and Criticisms	2	7	
Prof. Thayer	Biblical Interpretation: — its History, its Methods, its Principles and their Application (to New Testament Passages of historical, prophetical, ethical, and doctrinal import)	1	1	
	CHURCH HISTORY.			
Prof. Emerton	General Church History. — Lectures, Reading, and Essays	2	8	2
Prof. Emerton	The History of Christian Doctrines	2	12	
Prof. Emerton	Advanced Study and Research in Church History. — Church and State in the Middle Ages. — Reading of a mediaeval text and study of special topics	2*	3	1
	COMPARATIVE RELIGION.			
Prof. Everett	Studies in the Comparative History of Religions, particularly the Vedic Religion, the Hindu Philosophies, Buddhism, Mazdaism, and the Chinese Religions	2	17	4
	ETHICS.			
Prof. Peabody	The Ethics of the Social Questions. — The Questions of Charity, Divorce, the Indians, Temperance, and the various aspects of the Labor Question (Socialism, Communism, Arbitration, Coöperation, etc.), as problems of practical Ethics. — Lectures, essays, and practical observations	2	4	108
	THEOLOGY.			
Prof. Peabody	The Philosophy of Religion. — An Introduction to the study of Theology	1	6	9
Prof. Everett	Systematic Theology begun: The Psychological basis of Religious Faith	1	16	8
Prof. Everett	Systematic Theology continued: The Content of Christian Faith. An elaborate essay on some Theological subject is expected from each student taking this course	3	12	

* During the first half-year. † During the second half-year.

so many enter, intending to remain only a year or two, necessarily changes somewhat the character of the School. A large proportion of the men are new every year. The elective system makes it easy for a man to remain a year or two, selecting what seems to him most important, and then to leave, going perhaps to another school, or seeking some field of labor. The habit of dividing one's professional studies among different universities, taking what is most special in each, as is often done in Germany, is perhaps not a bad one. So far as this School is concerned, this method of study enables it to meet and to influence more persons than was formerly possible, while there is no falling off in the number of those who take the three-years' course. There is thus gain with no loss in the present condition of affairs.

The year was a pleasant one owing to the fact that all the professors were at their posts, no one being away on leave of absence.

The condition of the Divinity School Library is as follows: —

	Vol.	Pam.
In the Library, Oct. 1, 1890	21,576	3,852
Added by purchase, Oct. 1, 1890, to Sept. 30, 1891	200	. .
Added by gift, Oct. 1, 1890, to Sept. 30, 1891	1,367	415
	23,143	4,267
Less duplicates sold	69	33
	23,074	4,234
Increase in volumes, decrease in pamphlets by binding	126	563
In the Library, Oct. 1, 1891	23,200	3,671

The accessions were chiefly made up of two large gifts, one of 520 volumes and 73 pamphlets from the library of Rev. Henry W. Foote, given to us by Mrs. Foote, and the other of 668 volumes and 77 pamphlets from the library of Dr. Hedge, given by his son Frederic H. Hedge, Jr. Both of these gifts make interesting memorials of men who held special relations with the School, the one through his active connection with the Society for Promoting Theological Education, and the other as professor in the School. The books given by Mrs. Foote are of special value to us as they were selected by her from a list of those specially desirable for our Library which our librarian prepared from a catalogue of Mr. Foote's library.

During the year 6500 volumes have been catalogued. This number is large, as it includes most of our periodicals. The number of titles included in it is 3345, of which 2246 were fully catalogued for both author and subject catalogues. The Library is now about half catalogued.

From Oct. 1, 1890, to Sept. 30, 1891, there were borrowed from the stack for use at home 820 volumes, and for use in the building 206 volumes, and from the reserved books for over-night use 953

Instructors.	Studies and Text-books.	Exercises per week.	No. of students examined.
	FIRST YEAR.		
Prof. Williston	Contracts. Langdell's Cases on Contracts	3	145
Prof. Gray	Property. Gray's Cases on Property, vol. 1, 2	2	133
Prof. Smith	Torts. Ames's Cases on Torts	2	140
Prof. Williston	Civil Procedure at Common Law. Ames's Cases on Pleading	1	137
Mr. Chaplin	Criminal Law and Procedure. Chaplin's Cases on Criminal Law	2	142
	SECOND YEAR.		
Prof. Smith	Agency. No text-book	2	53
Prof. Williston	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	25
Prof. Ames	Contracts. Keener's Cases on Quasi-Contracts	2	53
Prof. Thayer	Evidence. No text-book	2	54
Prof. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases in Equity Pleading	2	18
Prof. Gray	Property. Gray's Cases on Property, vol. 3, 4	2	73
Prof. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	34
Prof. Ames	Trusts. Ames's Cases on Trusts	2	69
	THIRD YEAR.		
Prof. Thayer	Constitutional Law. No text-book	2	20
Prof. Smith	Corporations. No text-book	2	37
Prof. Langdell	Jurisdiction and Procedure in Equity. No text-book	2	22
Prof. Ames	Partnership. Ames's Cases on Partnership	2	37
Prof. Gray	Property. Gray's Cases on Property, vol. 5, 6	2	21
Prof. Langdell	Suretyship and Mortgage. No text-book	2	18
Prof. Smith	Agency. No text-book	2	29
Prof. Williston	Bills of Exchange and Promissory Notes. Ames's Cases on Bills and Notes	2	18
Prof. Ames	Contracts. Keener's Cases on Quasi-Contracts	2	2
Prof. Thayer	Evidence. No text-book	2	2
Prof. Langdell	Jurisdiction and Procedure in Equity. Langdell's Cases in Equity Pleading	2	1
Prof. Thayer	Sales of Personal Property. Langdell's Cases on Sales	2	4
Prof. Ames	Trusts. Ames's Cases on Trusts	2	1

	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.
ffered	16	15	18	25	19	12	12	17	17	14	33	15	20	28
dmitted	7	7	12	13	16	10	5	11	7	6	17	11	10	11

The following table exhibits the results of the examinations for a gree in each year since the establishment of the three-years' urse: —

Year.	First year.			Second year.			Third year.		
	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.	Offered.	Passed.	Failed.
1877-78	66	51	15	66	47	19	.	.	.
1878-79	50	42	8	40	39	1	.	.	.
1879-80	73	69	4	28	26	2	22	18	4
1880-81	45	43	2	49	46	3	18	18	0
1881-82	49	44	5	38	37	1	36	33	3
1882-83	46	44	2	36	34	2	21	19	2
1883-84	51	41	10	35	31	4	26	25	1
1884-85	61	56	5	30	29	1	23	19	4
1885-86	54	48	6	41	38	3	18	18	0
1886-87	66	59	7	40	38	2	26	26	0
1887-88	80	70	10	43	34	9	33	32	1
1888-89	72	66	6	58	55	3	30	29	1
1889-90	86	75	11	52	49	3	51	47	4
1890-91	107	102	5	62	54	8	47	46	1

In regard to the foregoing table it is to be observed that it in- ıdes no Special Students, and hence that all the applicants included it were either graduates of colleges or had passed the examination : admission. Of course this remark does not apply to the second- ar class of 1877-78, and this accounts in part for the much greater mber of failures in that class.

The following table exhibits the number of students who have re- ived the honor degree in each year since it was established: —

1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
7	8	10	10	5	5
1885-86.	**1886-87.**	**1887-88.**	**1888-89.**	**1889-90.**	**1890-91.**
7	9	9	12	14	17

The following table exhibits the number of students who, since the ablishment of the three-years' course, have been examined for a gree in the studies of any year without having been members of the hool during that year: —

The following table exhibits the average age at which students have entered the School in each year since 1873–74, that being the first year in which a record of ages was kept; also the age at which Harvard graduates, graduates of other colleges, and non-graduates respectively, have entered the School in each year since 1873–74; also the average age at which students have entered the School during the whole period since 1873–74; also the average age at which Harvard graduates, graduates of other colleges, and non-graduates respectively, have entered the School during the whole period since 1873–74: —

Year.	Of whole number of entries.	Of Harvard graduates.	Of graduates of other colleges.	Of non-graduates.
1873–74	23.34	23.58	23.76	22.83
1874–75	22.71	23.66	22.78	21.88
1875–76	22.98	22.35	23.28	23.28
1876–77	22.33	22.83	22.49	21.76
1877–78	23.84	23.25	23.83	22.97
1878–79	22.56	23.14	22.88	21.81
1879–80	23.20	23.46	22.77	23.02
1880–81	22.86	22.66	23.11	21.50
1881–82	22.68	23.06	23.73	21.85
1882–83	22.73	22.94	23.12	22.18
1883–84	22.64	23.17	22.86	21.53
1884–85	22.68	23.33	22.10	21.65
1885–86	22.73	23.21	22.84	22.03
1886–87	22.90	23.81	24.00	21.50
1887–88	22.86	23.33	23.42	22.07
1888–89	23.07	23.26	23.84	22.23
1889–90	22.91	23.19	22.88	22.42
1890–91	23.29	23.57	23.20	23.03
1873–74 to 1890–91	22.87	23.22	23.21	22.25

Within the short period of six years the School has more than doubled in size, its numbers having increased (according to the annual catalogues) from 154 in 1885–6 to 363 in the current year ($\frac{154}{363} = .424$). If we compare the number of new entries in the current year (205) with those of the corresponding date in 1885–6 (85), we have about the same result ($\frac{85}{205} = .425$). This comparison shows a gain of 120 in new entries in six years, or at the rate of 20 in each year. In 1886–7 the gain was 19, in 1887–8 it was 20, in 1888–9 there was no gain, but a loss of 22, in 1889–90 not only was the loss of the previous year made up, but in addition there was a gain of 22, in 1890–91 there was a gain of 6, while in the current year there is a gain of 53 ($19 + 20 + 0 + 22 + 6 + 53 = 120$). In making this comparison the entries of each year have been taken, not for the entire year, but to the date corresponding to that of this report.

The preceding table exhibits the whole number of students who have been members of the School since the establishment of the three-years' course, classified according to the states and countries from which they came.

There will be found in the Appendix (pp. 214–219) a table exhibiting the number of graduates of colleges other than Harvard who became members of the School between 1870–71 and 1891–92, both inclusive, classified by colleges.

Of this remarkable increase in the number of new entries very little has come from Harvard graduates. It is true that only 35 Harvard graduates entered the School during the year 1885–6, while 57 have already entered in the current year. But, on the other hand, 59 had entered at the corresponding date in 1890–91, and 61 at the corresponding date in 1889–90. Moreover, 47 entered in the year 1883–4, 56 in 1884–5, 46 in 1886–7, 52 in 1887–8, and 50 in 1888–9, while, as far back as 1879–80, 59 entered during the year. The large increase in the number of new entries within the last six years has, therefore, come chiefly from graduates of other colleges than Harvard and from non-graduates, and the extraordinary increase in the current year has come wholly from those two sources.

In 1870–71 the graduates of other colleges who entered the School (41) exceeded the Harvard graduates (19) by more than two to one. During the next two years the Harvard graduates gained in number, while the graduates of other colleges lost. In 1873–4 there were just 29 of each. In 1874–5 the Harvard graduates jumped to 40, while the graduates of other colleges dropped to 15; and in every year from 1874–5 to 1890–91, both inclusive, being a period of 17 years, the number of Harvard graduates entering the School exceeded those from all other colleges, and on an average they exceeded them by nearly two to one ($\frac{442}{790} = .559$). There seem to have been two causes for this comparative falling off in the graduates of other colleges, namely, the increased requirements for our degree, and the constant multiplication of law schools in all parts of the country. For seventeen years this School was unable to offer sufficient attractions to overcome these two obstacles. At length, however, it has succeeded in accomplishing that object, at least if the experience of the current year is to be taken as any indication of the future. In 1885–6 only 25 graduates of other colleges entered the School. In 1886–7 the number rose to 34, the largest number since 1870–71. In 1887–8 the number was 30, in 1888–9 it was 27, in 1889–90 it was 35, the largest number since 1870–71, in 1890–91 it was 42, 1 more than in 1870–71, and in the current year, to date, the number has jumped to 73, being an increase of 31 over the whole number who

8 who entered in advance; 4 who were in the first-year class in 1889–90, and who, having been absent during the year 1890–91, reëntered the School at the beginning of the current year; and 5 who, having previously been special students, gained admission to the second-year class at the beginning of the current year. Deducting these 27, however, there still remain 85 men in the second-year class who were drawn from the first-year class of 1890–91, being the entire class *minus* 21 (106 — 85 = 21), — a very remarkable fact, especially when it is added that 5 of the 21 are still in the School (*i. e.*, in the first-year class), and that of the 16 who have not returned to the School only 5 had passed sufficient examinations to entitle them to enter the second-year class.

The present third-year class is relatively small (48), being larger by 3 only than the third-year class of 1890–91 (45), and smaller by 4 than the third-year class of 1889–90 (52); and yet, when it entered the School (1889) there were 153 new entries, being 42 more than in 1888 (111), and 19 more than in 1887 (134). In truth, the class as such has never been prosperous. It started with a smaller number (90), relatively to the whole number who entered the School during that year (153), than any other class that has entered the School within the last six years; and it has lost a larger number from failures to pass the necessary examinations than any other class which has entered the School within the same period. Having started with 90 members, it lost 35 of these before the beginning of its second year, and thus its number was reduced to 55. At the beginning of its second year, however, it received an accession of 18 new members, 5 of whom were admitted to advanced standing, 5 of whom, having previously been special students, then gained admission to the second year, and 8 of whom, having been members of previous classes, had thus acquired the right to enter the second year. The class thus started its second year with 73 members, 25 of whom it lost before the beginning of its third year, and thus its number was reduced to 48, of which number it now consists.

It should be added, however, that 19 of the men whom the third-year class has lost are still in the School, 16 of them being members of the second-year class, 2 of them being members of the first-year class, and 1 of them being a special student. Independently of this fact, however, it is believed that the relative smallness of the third-year class has no significance in relation to the prosperity of the School, but that it is due entirely to accidental causes.

The number of special students now in the School (61) is precisely the same as a year ago; and yet the number of non-graduates who have already entered the School during the current year (75) is ered. The size of our present first and second year classes makes it pretty clear that we shall have more students next year than can be properly accommodated unless some mode of relief can be devised. It is not too much to say that fifty more students next year than we have this year would greatly interfere with the comfort of every person connected with the School; and the only effective mode of guarding against such a state of things, either next year or for the next few years, would seem to be by limiting the number of students to be received. It has already been decided to admit to the School after next year only graduates of colleges and such non-graduates as pass the examination for admission; and the requirements of the latter are to be materially increased. If this change were to go into effect next year, perhaps the safe and prudent course would be to wait another year before making any further change. Unfortunately, however, the change already announced, so far from affording any relief for next year, will aggravate the evil by increasing the number of non-graduates who will seek admission to the School as special students. If, however, it should be decided to limit hereafter the number of students to be received, there would seem to be no good reason why we should not next year discriminate in favor of graduates of colleges and such non-graduates as pass the admission examinations. When it is once decided that the number of students is to be limited, surely we may give a preference to those who are best qualified to avail themselves of the advantages which the School offers.

The most pressing question, however, just now is, not what shall be done, but whether anything shall be done; for the danger is that all action will be delayed until the beginning of the next year is actually upon us; and then it will be too late to act until another year. If no action be taken during the current year, and we find ourselves at the beginning of next year with more students than we can properly care for, we shall be in a dilemma for which there will be no excuse. The problem awaiting solution is one which time will not solve; nor do we need further experience to aid us in its solution. We already know, with as much certainty as anything of such a nature can be known, that, if no action be taken, next year will witness a large increase in the number of students in the School; and we already know what will be the effect of such an increase.

The librarian is in despair at the rapid consumption of the library which is now going on. The word "consumption" is used advisedly. Indeed, perhaps "destruction" would not be too strong a word to express the existing state of things. What is here referred to is not the increased use of the library consequent upon the increased number of students in the School. Such increased use is legitimate, and for nearly every case there reported is also reported in the regular Reports. Such also is the device of printing, at the beginning of the year, summaries of different courses, with lists of all the cases to be referred to; for this has the effect of greatly increasing the number of students who, first or last, will study every case contained in such lists.

C. C. LANGDELL, *Dean*.

AUSTIN HALL, December, 1891.

THE MEDICAL SCHOOL.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — As Dean of the Medical Faculty I have the honor to submit the following report upon the Medical School for the academic year 1890–91: —

During the past year the Faculty has taken a very important step towards a still further advance of the standard of medical education. After a prolonged discussion, the Faculty on May 16th voted with almost perfect unanimity to establish a single four-years' graded course of instruction to go into effect in Sept. 1892. The difficulties which for the last thirteen years have attended the plan of offering a required three-years' and an optional four-years' course of instruction will thus be removed and the Harvard degree of M.D. will have a single definite meaning. The Faculty has not lost sight of the possible diminution of the number of students consequent upon this increase in the requirements for the degree; but it feels that, as public munificence has in the past enabled it to carry out its educational reforms, it will be able to appeal with perfect confidence to the community to make good any loss of income arising from this cause.

The opening of the Sears laboratory building in December of the current year was an important event in the history of the School. Although in the construction of the main building eight years ago large facilities were provided for instruction in Pathology, they have already been found insufficient, and a new and important branch of medical science, Bacteriology, has practically been created since the original plans were drawn. The very timely and generous gift of Dr. Sears, already announced in the report for 1888–89, has greatly enlarged our capacity for instruction in these directions by providing a commodious and well-equipped building devoted exclusively to laboratories for Pathology and Bacteriology. Dr. Sears has not only directly added to our facilities for teaching these two subjects, but he has also indirectly benefitted the departments of Anatomy, Histology

Much special work has been done in the School in addition to the regular instruction as set forth in the appended tables. This work may be summarized as follows: —

Anatomy. — In the dissecting room much work has been done in collecting statistics of details of anatomical structure with reference to limits of variation and to anomalies of surgical and medico-legal importance. The collection of large models of bones for class demonstrations made by Mr. Emerson under the direction of the professor of anatomy is increasing.

Histology and Embryology. — Asst. Prof. C. S. Minot has nearly completed his work on Human Embryology and in connection with his studies for it has published a paper entitled "A theory of the Structure of the Placenta" (Anat. Anzeiger, VI. 125).

Mr. Samuel Dexter, whose recent death has deprived us of an enthusiastic and able student of pure science, pursued his investigations in the laboratory and published a short but valuable paper in the Anatomische Anzeiger, vol. VI., entitled "The Somites and the Cœlome in the Chick."

Physiology. — Dr. J. W. Warren made an extended series of observations on the knee jerk, studying particularly the phenomena manifesting themselves when blows are struck upon both ligaments either simultaneously or separated by a short interval of time.

Mr. R. E. Edes studied by means of a capillary electrometer the changes in the action current of an excised nerve under the influence of prolonged stimulation.

Mr. C. A. Ewald investigated the effect of light upon the respiratory gas exchange in frogs.

Dr. J. E. Goldthwait used the facilities afforded by the laboratory in his work upon the surgery of bones.

Chemistry. — Prof. E. S. Wood has investigated the time required for the complete elimination of arsenic from the system, and has ascertained that about twice as much time is required as is stated in standard works on toxicology.

In coöperation with Dr. F. C. Shattuck special study has been given to the character of the urine in cases of uraemia, particularly to determine changes in the amount of the lower products of oxidation, such as uric acid, kreatinine, etc., in cases of uraemic poisoning.

Work upon dried bloodstains has also been continued.

Prof. W. B. Hills has been engaged, at the request of the State Board of Health, in investigating the subject of chronic arsenical

The scholarships were awarded as follows: —

1st Barringer Scholarship,	F. A. Davis . . .	3d Class.
2d " "	E. A. Tracy . . .	3d "
Faculty "	C. B. Dunlap . .	2d "
" "	J. Selva	2d "
" "	C. B. Stevens . .	2d "
" "	J. B. Ogden . . .	2d "
Cheever "	C. P. Jones . . .	1st "
Foster Gratuity,	E. G. Bryant . .	4th "
" "	J. E. Loveland .	2d "

The usual statistics of the School will be found in the appended tables.

H. P. BOWDITCH, *Dean.*

TABLE I. — SHOWING NUMBER OF TERMS SPENT AT THE SCHOOL BY GRADUATES.

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.
Spent six terms .	79 91%	67 88%	57 96%	63 89%	72 91%	83 85%	77 88%	51 93%	58 88%	62 94%
Spent five terms .	2 2%	4 5%	0	3 4%	3 4%	4 4%	4 4%	2 3%	2 3%	1 1½%
Spent four terms .	4 4%	4 5%	2 3%	4 5%	4 5%	1 1%	3 3%	2 3%	6 9%	1 1½%
Spent three terms .	0	1 1%	0	0	0	0	0	0	0	0
Spent two terms .	1 1%	0	0	1 1%	0	1 1%	3 3%	1 1%	0	2 3%
Total graduated .	86[1]	76[2]	59[3]	73[4]	79[5]	98[6]	87[7]	56[8]	66[9]	66[10]

[1] Includes nine students of the fourth class.
[2] Includes six students of the fourth class.
[3] Includes nine students of the fourth class.
[4] Includes three students of the fourth class.
[5] Includes nine students of the fourth class.
[6] Includes eleven students of the fourth class.
[7] Includes eleven students of the fourth class.
[8] Includes seven students of the fourth class.
[9] Includes thirteen students of the fourth class.
[10] Includes seventeen students of the fourth class.

TABLE II. — STATISTICS OF EXAMINATIONS.

EXAMINATIONS FOR ADMISSION.

			Physics.	Latin.	English.	Elective.	Rejected.
1891.	June	Offered . .	35	34	38	38	6
		Conditioned	8	7	7	2	
	Sept.	Offered . .	56	55	62	61	5
		Conditioned	12	15	1	7	

1891	Passed	60		1		8								2		1	
	Rejected	9	13	0	0	0	0	—		—		—		0	0	0	0
	Total	69		1		8								2		1	

FOURTH CLASS.

		Ophthalmology.		Dermatology.		Gynaecology.		Clinical Obstetrics.		Diseases of Children.		Dis eases of Nervous System.		Mental Diseases.		Legal Medicine.		Otology.		Laryngology.		Operative Obstetrics.		Operative Surgery.		Bacteriology.		Hygiene.	
			%		%		%		%		%		%		%		%		%		%		%		%		%		%
1887	Passed	12		12		8				11		11		8		11		9		11				9					
	Rejected	4	25	0	0	5	38			0	0	1	8	6	42	0	0	1	10	0	0			2	18				
	Total	16		12		13				11		12		14		11		10		11				11					
1888	Passed	2		3		3				0		0		3		2		2		3				0					
	Rejected	1	33	0	0	0	0			0	0	0	0	0	0	1	33	1	33	0	0			0	0				
	Total	3		3		3				0		0		3		3		3		3				0					
1889	Passed	3		6		8		4		9		1		0		2		0		3		9		1					
	Rejected	0	0	0	0	0	0	2	33	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0				
	Total	3		6		8		6		9		1		0		2		0		3		9		1					
1890	Passed	3		5		13		12		15				1		1		1		1		16		6		1		1	
	Rejected	2	60	0	0	0	0	0	0	2	11			0	0	0	0	0	0	0	0	1	6	2	25	0	0	0	0
	Total	5		5		13		12		17				1		1		1		1		17		8		1		1	
1891	Passed	11		7		13		7		19		1		1		4		2		1		15		5		2		1	
	Rejected	0	0	0	0	0	0	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	11		7		13		8		19		1		1		4		2		1		15		5		2		1	

	SECOND CLASS. — (CONTINUED.)		
Prof. Fitz	Special Pathological Anatomy, with Demonstrations	Two.	
Drs. Whitney and Gannett	Laboratory Exercises in Pathological Histology	Two.	
Prof. Fitz and Dr. Gannett	Practical Instruction in Performing Autopsies	Throughout the year.	
Profs. Shattuck and Mason, & Drs. Garland & Vickery	Clinical Medicine, including one weekly conference	Seven.	
Drs. Garland, Gannett, and Withington	Practical Instruction in Auscultation and Percussion	Six, first half-year.	
Dr. Cutler	Recitations in Theory and Practice	Two.	
Prof. Knight and Dr. Hooper	Laryngoscopy	Six, first half-year.	
Dr. Burrell	The Application of Bandages and Apparatus	Six, October till January.	
Profs. Cheever and Warren	Clinical Surgery	Two.	
Prof. Porter	Clinical Surgery	Three.	
Drs. Elliot, Harrington, Monks, Burrell, & Watson	Clinical Surgery. Practical Exercises	Throughout the year.	
Asst. Prof. F. H. Williams	Therapeutics	Three.	85
Asst. Prof. Rotch	Paediatrics	Two, for two months.	
	THIRD CLASS.		
Prof. W. L. Richardson	Theory and Practice of Obstetrics	Two.	89
Dr. C. M. Green	Recitations in the Theory and Practice of Obstetrics	One.	
Dr. C. M. Green	Operative Obstetrics	Twelve practical Exercises.	
Drs. C. M. Green, Reynolds, and Townsend	Practical Instruction in Clinical Obstetrics	Throughout the year.	
Prof. W. L. Richardson and Drs. C. M. Green, Reynolds, and Townsend	Obstetrical Conference	One, after December.	
Prof. Minot	Theory and Practice of Physic	Two.	88

	THIRD CLASS. — (CONTINUED).		
Dr. Davenport	Clinical Gynaecology	Two, first half-year.	
Dr. Post	Practical Diagnosis and Treatment of Syphilis	One, till Feb.	
Profs. Blake and J. O. Green	Practical Diagnosis and Treatment of Diseases of the Ear	One, January till April.	1
Prof. Blake	Anatomy, Physiology, and Diseases of the Ear	Two, for three months.	
Asst. Prof. Rotch	Practical Diagnosis and Treatment of Diseases of Children	Two.	75
Dr. Putnam	Practical Diagnosis and Treatment of Diseases of the Nervous System	One.	
Dr. Fisher	Mental Diseases	Two, second half-year.	
Asst. Prof. Draper	Legal Medicine, with Demonstrations	Two, first half-year.	
	FOURTH CLASS.		
Prof. Fitz	Clinical Medicine	One, for one month.	
Dr. Garland	Clinical Medicine	One, for six months.	
Dr. Gannett	Clinical Medicine.	One, for seven months.	
Dr. Vickery	Clinical Medicine.	One, for three months.	
Dr. Gay	Clinical Surgery	Two, for two months.	
Dr. Burrell	Clinical Surgery	Two, for three months.	
Prof. Porter, Asst. Prof. M. H. Richardson, and Drs. Mixter and Monks	Operative Surgery	Practical Exercises.	5
Dr. Bradford	Orthopedic Surgery	Two, for two months.	
Prof. W. L. Richardson and Dr. C. M. Green	Clinical Obstetrics	Two, for five months.	9
	Operative Obstetrics	Practical Exercises.	15
Prof. Williams	Clinical Ophthalmoscopy	Two, for three months.	11
Dr. Wadsworth	Ophthalmoscopy	Two, for four months.	
Prof. White	Dermatology	Two.	8
Dr. Tilden	Clinical Dermatology	Two, for three months.	

THE DENTAL SCHOOL.

To the President of the University:

Sir, — As Dean of the Dental Faculty I have the honor to submit the following report upon the Dental Department for the year 1890-91: —

The number of students matriculating was forty-four, divided as follows, viz.: First year, twenty-three; second year, four; third or graduating year, seventeen. On account of sickness or for other causes three of the first-year men dropped out during the year. Of the third-year men three were students of the preceding year who had failed to pass the final examinations.

At the Commencement in June, 1891, fourteen were graduated and three failed to pass.

The subjects of instruction in the first year have been mainly the same as in former years, consisting of Anatomy, with dissecting; Physiology, including compulsory laboratory work in sections; and General and Analytical Chemistry. These studies have been pursued in the Medical School, under the instruction of its professors and in connection with the Medical Class, and the students have taken with that class the regular examinations.

A new form of instruction has also been given for the first time, to students of the first year, by Drs. Stoddard and Boardman upon invitation of the Faculty, in the elements of Operative Dentistry, two afternoons of each week. This instruction proved of great assistance in preparing students for practical work on patients at the beginning of the next year.

In Operative and Mechanical Dentistry the usual amount of instruction has been given by professors and instructors. Owing to the fact that these two branches constitute by far the greatest part of the life-work of the dentist, much the greater part of the School time during the second and third years is necessarily devoted to them. One hour of every morning of every week of the academic year is devoted to didactic teaching by the various professors and instructors, while the rest of the day is equally divided between these two departments for their practical teaching. In this practical work the general efficiency has been greatly increased, and the School is prepared to give better instruction than at any previous time. Instruction has been given systematically for the first time by Dr. E. E. Hopkins in crown and bridge work, and clinical instruction by Drs. Clapp, Cooke, Potter, Taft, and Wilson in methods of operative work. Dr. E. H. Smith has single exception of Dr. Bouvé who, after having given long and valuable service to the School, declined a renomination on account of failing health. Dr. Waldo E. Boardman was appointed to fill his place. Dr. A. H. Stoddard was appointed instructor in Mechanical Dentistry. Other volunteer instructors and assistants will be needed in this department the ensuing year on account of the great influx of students. Drs. Henry W. Gillett and Henry L. Upham were appointed instructors in the elements of Operative Dentistry to the first-year students in the places of Drs. Stoddard and Boardman, who have accepted other positions. The assistant demonstrators in Operative Dentistry have done excellent service in their specialty.

The steady increase in the number of our students renders continually more imperative the demand for quarters more roomy, better lighted, and in every way more suitable for our purposes. The operating-room especially is already greatly overcrowded, fully half of the operating chairs being placed at such a distance from the windows that the students are badly handicapped in their endeavors to do justice to their patients throughout the year, but especially in the short winter afternoons from November 1st to March 1st, comprising almost half the school year. An effort is making to obtain electric lights; but the expense seems to make it impossible. The same is true of the mechanical laboratory. But a very small proportion of the students have access to a proper light; and to a majority of them the performance of the best work is thus rendered unnecessarily difficult.

Last year the organization of the Society of the Harvard Dental Alumni was changed to correspond in plan and purpose with those of the Harvard Law School and Harvard Medical School Associations, and the name was changed to correspond. This was done with the desire and hope that its members, through a more intimate connection with, and a better realization of, the condition and needs of the School, might better aid us. The method has already worked so well with the Law School, and promises so fairly with the Medical School, that we have sanguine hopes of a similar benefit in our case.

Action has already been taken by the appointment of committees having these objects in view by both the association and the Dental Faculty, and it is hoped that the Report of another year may speak definitely of plans formed and action taken.

The value of the School as an educator of young men for a profession second only to that of medicine in bringing help to the suffering, and of its hospital for the gratuitous relief of pain, has seemed to be scarcely appreciated in our community. Thousands of teeth are exigencies of farm and family life in our rigorous climate often make it imperative that young men competent to labor should remain at home during the early autumn to perform their part towards putting the farm to rights for the winter.

The School was strengthened in May, 1891, by the appointment of a well-known agriculturist, Mr. Edmund Hersey of Hingham, to be superintendent of the Bussey Farm, in place of L. E. Northway, resigned.

Arrangements have now been perfected in two of the houses upon the estate so that country boys of good mental calibre who are unable to pay out money for board and lodging while attending the School can be boarded at the farm in return for work done by them in the fields and stables.

Gifts of Horticultural Journals for the library were received from Mr. B. M. Watson, Jr.

F. H. STORER, *Dean.*

THE VETERINARY SCHOOL.

To the President of the University:

Sir, — I beg to submit herewith the ninth annual report of the School of Veterinary Medicine.

Of the three members of the third class all presented themselves for the final examinations, in which all were successful. There were six graduates, three from the third class, and three others who, for various reasons, had not previously qualified.

There are thirty-one students in the School, divided as follows: six in the third class, four in the second, seventeen in the first, and four in the special.

Of the increased number of applicants for admission to the School this year (18) all but one were successful, while in years past there have been instances in which fully one third of the applicants were not able to reach the then somewhat lower standard for admission. This fact seems rather to confirm the experience of last year, and to show that a fairly severe admission examination does not of itself diminish the number of students, and that it does improve the quality of those who offer themselves.

As a matter of fact, the following comparison will show that our list of subjects for the admission examination will now compare very favorably with that maintained at the Medical School so recently as 1889, and it is fully as severe a test as is imposed in any veterinary school in *an English-speaking* country.

Warranty and Evidence; and H. F. Leonard, M.D., M.D.V., a graduate of the School, has been appointed a Clinical Lecturer. Of Dr. Osgood's appointment, "The American Veterinary Review," the representative journal of the profession in America, says: "Dr. Osgood has accepted the instructorship of Bovine Pathology in the Veterinary Department of Harvard University. He will prove a valuable acquisition. Few men have had better opportunities for preparation in the work of his department, or are capable of doing better justice to the work of the post." In the same issue of the "Review" the editor, after describing the progress recently made in teaching methods "in most of the countries of Europe, and notably in France," says: "But it would seem that an important question has still been somewhat overlooked in omitting to provide for so essential a matter as the creation of a special chair of Bovine Pathology. It is, indeed, a most remarkable fact that such a special department has not been in existence from the first as a separate chair." In view of the great and growing interest in some of the diseases of cattle, and of their intimate relations to the human family as furnishing in milk and meat a large proportion of our food, through which some of their diseases may be, and are, communicated to human beings, this new appointment will prove to be not only of great advantage to our students, but through them to the communities in which they will hereafter practice.

The course now undertaken by Mr. Underwood is one that, it is believed, has never before been attempted at any veterinary school. It will "consist of practical talks upon the law of sales and warranty, and embrace also a general discussion of rules of evidence, with practical suggestions on expert testimony and the conduct of witnesses in court." With Legal Medicine as taught at the medical schools the practicing veterinarian has nothing to do; but in examining horses for soundness, in giving testimony in court both as a witness and as an expert, he is constantly brought face to face with questions concerning his own actions which are very puzzling in the absence of all knowledge of the subjects to be embraced in these lectures. The course will prove to be useful and interesting.

The cheerful and kind coöperation of Drs. Beckett, Lee, Winslow, and Soule, who work without increase of salary, and the appointment of Dr. Leonard, whose remuneration is nominal, make it possible for us to undertake in 1891–92, for the first time, a thorough course of instruction in Clinical Medicine. By this arrangement the Veterinary Hospital is now used much as hospitals for human beings are used by the medical schools. Each veterinarian gives from one to two hours upon a certain day of the week; this gives the students an the probable further needs of the department, it would be unwise to increase the present investment in Village Street.

This decision left but two alternatives, namely: keeping on with the present very inadequate hospital accomodations, or the entire abandonment of the location and the erection of larger buildings upon land to be purchased elsewhere. This last plan, although very desirable, needs so much money and time for its accomplishment that it will not relieve the immediate necessities of the Hospital. Were it not for the probable bad effect on the School of a division of the establishment into two parts, suitable premises could be hired at once for the much-needed enlargement of the Hospital.

Finances. — The total earnings of this department for the year were $20,905.78. Of this amount the School earned only $2427, while its maintenance cost at least $5000. The Hospital, therefore, has paid for the School a deficiency of as much as $2573, and all its own running expenses, including salaries, wages, repairs and improvements on buildings, and has earned a surplus for the year of $329.90. That is to say, if the School were supported, as schools of the sort are in all other places where they exist, by endowment in one form or another, the Hospital, small as it is, would show a surplus of $2902.90 as a result of its work for the year.

The direct suggestion from this situation is the financial separation of the two divisions. This can be done in several ways, among which is the endowment of the School as a whole, or the endowment of some one or more branches of instruction, the salaries for which are now a charge against the general income. The salary list now amounts to $4756, and several of these salaries are only nominal compensation for the work done and must be increased from year to year if the instruction is to be well kept up and gradually expanded. The Hospital finances would take care of themselves, and the University could easily rid itself of the work of carrying it on. If, however, it is thought that this separation would be unwise (and that is most certainly my own opinion), the Hospital already has sufficient patronage to enable it, if put into larger quarters, to help very materially in supporting the School for some time to come.

Since the establishment of the School of Veterinary Medicine in Harvard University other universities have undertaken similar establisements, until now the three-year graded course is maintained at the University of Pennsylvania, the University of Minnesota, and at McGill University in Montreal.

As indicating the progress made in this direction by the veterinary profession itself during the same time, it is proper to say here that at *on the University, 1889–90*, by W. H. Tillinghast, Assistant Librarian; No. 42, *The Orators and Poets of Phi Beta Kappa, Alpha of Massachusetts, 1782–1890*, by Mr. Tillinghast.

Number II. of the *Special Publications of the Library of Harvard University* was so near completion at the end of the Library year that at the date of this report it is published, and may accordingly be included in the work of the year. This is an *Index to the Subject Catalogue of Harvard College Library*, upon which Mr. Lane has been at work since 1886, while his labors in systematizing the Catalogue itself so that such an index could be well made were begun in 1882–83. Such a number of copies as were needed for the use of the Library were printed in octavo form, double column, 170 pages. As it is the most complete list of topics which has yet been printed, it was thought that it might be of some service in other libraries; and so two hundred copies were struck off, by permission, for the Library Bureau in Boston (and at its expense), where they are now for sale. The list includes about 15,000 topics, and this number is swelled by cross-references to about 22,000 entries. It excludes proper names and the scientific appellations of animals, plants, and chemical or medical substances. The arrangement of the Subject Catalogue of this Library is peculiar to it, and on a system which was devised by the late Dr. Ezra Abbot. He sought to preserve the advantages of a classified catalogue with those of an alphabetical scheme. So the comprehensive subjects in it appear in an alphabetical order, and the subdivisions of these subjects are also arranged in an alphabetical sequence. This alphabet within alphabet is confusing to anyone not accustomed to the Catalogue, and such a person gains little advantage from his experience with other simple alphabetical or classified catalogues. Two classes of persons have been accordingly usually perplexed in attempting to use our Catalogue. First, those who, having become used to the sections devoted to departments of learning in which their studies generally lay, were puzzled when they attempted to explore unwonted fields; second, those who had no experience with any part of the Catalogue and came here with other preconceived notions of catalogue arrangements. Further than this, even for those who understood its principles, to be expert in consulting it needed constant familiarity with it.

When it was determined to render the use of the Catalogue easier by supplying an index, and to exclude proper names of persons, it became necessary to transfer from the Subject Catalogue to the Authors' Catalogue large bodies of personal subjects, that they might naturally fall into the alphabetical order of the latter catalogue. These classes *comprised individual* biographies and criticisms on au-been made in the general library for volumes parted with on exchange account.

The Medical School depends upon the Collections of the Boston Medical Library Association, kindly thrown open to its use.

The present extent of the laboratory and class-room libraries is as follows:

	Permanent.	On Deposit.	Totals.
Laboratories.			
1. Chemical	495	. .	495
2. Zoölogical	140	. .	140
3. Geological	27	. .	27
4. Meteorological	56	. .	56
5. Botanical	638	. .	638
6. Physical	. .	326	326
7. Physical Geography	172	141	313
8. Mineralogical	93	141	234
Class-Rooms.			
1. Classical	2089	185	2274
2. History	570	1	571
3. United States History	747	. .	747
4. Political Economy	562	. .	562
5. Mathematics	188	136	324
6. French	555	. .	555
7. English	34	. .	34
8. Sanskrit	22	. .	22
9. German	307	. .	307
10. Social Questions	423	. .	423
11. Music	54	. .	54
12. Philosophy	186	. .	186
13. Semitic	220	. .	220
Totals	7,522	930	8,452

An assistant is sent from the Central Library every week to examine he shelves of these libraries by the shelf-lists, and the titles of missng books are reported at once to the officer of instruction in immediate charge of the library where such loss or misplacement has been discovered. Temporary loans of books from Gore Hall are made to these libraries to facilitate the instruction of the several departments. In 1890–91 four of these libraries were open evenings for use when Gore Hall was closed.

Of the accessions to the Gore Hall Collections there were added by gift 4781 volumes and 10,400 pamphlets; and the accessions also nclude 855 volumes of bound serials (received in parts), and 691 volumes made by binding pamphlets.

The accessions of recent years to the l
the laboratory and class-room libraries)

In 1879	10,389 vols.	I
" 1880	7,247 "	'
" 1881	9,804 "	'
" 1882	9,192 "	'
" 1883	9,818 "	'
" 1884	12,360 "	'
" 1885	14,558 "	

The following table shows the use of t
as compared with previous years: —

	1884–85.	1885–86.	1886–87.
1. Books lent out . .	52,322	60,195	62,861
2. Used in the building	9,433	8,816	12,041
3. Overnight use of reserved books .	13,791	18,505	20,052
Total (excluding No. 3, which is incl. in No. 1)	61,755	69,011	74,902
No. of books reserved	5,230	5,840	6,280

The extent of the number of book
use no record is kept — has a tendenc
volumes used in the building, of whos
establishment of class-room libraries, m
year, has also induced a diminution
against the classes marked in the above
the observation, however, of those in ch
of which no statistics are kept, that it i
by year, and that the increase for las
addition to the books reserved by instru
volumes, there are in the reading-room 16
for students' reading by the instructors
Of these, 1150 are English, 348 French,
The use of these books is not governed
reserved books, but the books may be ta

In the Delivery Room are 5546 volum
to students. Of these, 3198 volumes
may be taken out as seven-day books,
reference only, comprising dictionaries,
useful books of reference in all departm

The number of students of the "Annex" who have borrowed books during the past six years is shown in the following table: —

BORROWERS FROM THE "ANNEX."

Years.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.	1890–91.
1. Borrowers	44	58	66	72	84	82
2. Books borrowed . . .	992	1,230	1,545	1,531	1,329	930
3. Reserved books . . .	223	383	301	299	286	284

The figures in the third class are included in class no. 2.

The following table shows for a series of years the use made of "Admission-Cards," by which students have access to special classes of the books for investigation at the shelves: —

ADMISSION–CARDS.

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.	1890–91.
History . .	46	45	52	68	74	71	81	53	36
Science . .	16	18	12	14	12	14	9	6	8
Art(incl.Music)	14	12	14	16	13	16	24	19	15
Literature .	42	37	42	49	62	54	27	32	38
Classics . .	36	42	53	52	47	42	24	22	18
Philosophy .	5	6	8	9	8	9	16	9	12
Theology . .	3	8	9	12	15	11	6	4	8
Polit. Econ. .	5	8	12	44	64	49	25	13	9
Total students	167	176	202	264	295	266	212	158	144
Times of use	3,340	3,520	4,020	5,820	7,375	7,980	8,390	6,490	2,512

It was deemed necessary during the course of the year to put this privilege of access to the shelves under further restrictions, and in February, 1891, the Library Council issued the following circular: —

TO OFFICERS OF INSTRUCTION: — The Library Council have adopted the following regulations concerning admission to the shelves.

Hereafter no person receiving instruction in the College will be given a card of admission to the shelves except upon presentation of a prescribed form of recommendation signed by his Instructor in the subject for which the permit is desired.

Instructors can obtain forms of recommendation at the Library, but none will be issued to students.

The Council wish to remind Instructors of the importance of exercising care in granting recommendations. Admission to the shelves is not designed to provide *students with* a new resort for general reading, or to

These statements do not cover the use of "reserved books." Nor is there any record of the use made of the 572 periodicals, current numbers of which are on file in the Reading Room.

The number of persons registered and entitled to take books away from the Library building is as follows: —

Students	1,567
Instructors	142
Others	318
Total	2,027

SUNDAY USE.

	1882–83.	1883–84.	1884–85.	1885–86.	1886–87.	1887–88.	1888–89.	1889–90.	1890–91.
Days open	36	36	37	37	37	37	37	37	37
Users	2,268	2,448	2,631	2,842	2,880	2,894	3,024	3,089	3,104
Average	63	68	71	76	77	78	81	83	83
Highest no.	92	95	105	108	118	106	108	118	132

Mr. Frank Carney, who under Mr. Tillinghast has charge of the shelves, reports that 4040 volumes have been permanently placed in the new stack since the last report, making 119,847 so placed out of the volumes constituting the Gore Hall collection.

Mr. Carney verified the shelf-lists of the classifications in the stack, between the 10th of August and the 9th of September, showing about 160,000 volumes. The number of volumes which failed to be accounted for was 175. Of those reported missing in previous years 62 were found in their places, having been silently returned during the year. Seven of these were reported missing as far back as 1883. Of books reported missing since 1883 there are still 402 unaccounted for; 255 having disappeared from the reserved books, and 147 from the stack. Of these 175 unaccounted-for volumes of the year just closed about 133 have disappeared from the books of reference, reserved books, and other collections exposed to the handling of all frequenters of the Library, the other 42 having disappeared from the shelves to which only the staff of the Library, officers of the College, and a limited number of other persons have access.

In the stack, particularly in those sections most frequented by holders of "admission-cards," many cases of disarrangement were discovered, 212 books being found on wrong shelves. Such misplacement always causes delay in finding books, and in the case of books placed on a wrong shelf is equivalent to actual loss. It is clear that facility of access to the shelves causes results which in the interest of the greater number of users should be counteracted. Reference has already been *made to steps* taken last February.

the breaks in progress occasioned by drilling three new assistants. We have undertaken to analyze systematically the current volumes of certain society transactions and similar publications, and for this purpose we have used cards on which the title of the publication has been already printed, thus reducing the clerical labor to some extent. Besides the obvious advantage of better indexing the Library, which such analyzing accomplishes, it not infrequently prevents buying papers in a separate issue, which the Library already possess in a set of transactions. So far as the new accessions go, for which we have printed cards, it has been easy further to increase the effectiveness of the Catalogue in the case of volumes of collected essays and the like, by multiplying these cards and inserting one under each head treated in the book.

We have made new arrangements lately by which a more regular supply of dissertations from the German universities will come to us. Those relating to historical, biographical, and philological subjects are treated as books. Those falling naturally into medical and scientific classifications are temporarily placed in the pamphlet files, pending the rearrangement of the scientific part of the Library. These last number at present 780, but this number does not include the chance accessions of former years, which can be found in the same files under the author's name. The more technical ones, relating to astronomy, systematic botany and zoölogy, have been sent of late, as they have come in, to the libraries of the Observatory, Herbarium, and Zoölogical Museum, respectively. I have hopes that when the Boston Medical Library Association erects a new building, the medical section of these dissertations can be sent to that library, together with the Boylston Collection of old medical books, to recompense that association for permanent privileges in their library, granted to the Medical School of the University. Considering the existence of that library and of the medical section of the Boston Public Library, it does not seem desirable to maintain more than a small working collection, principally of current periodicals, in connection with the Medical School.

The number of volumes waiting to be catalogued October 1, 1891, was 4536. This number includes 430 in the cataloguers' hands, and 556 not yet passed on from the collating room; while the balance is made up of the remnants of the considerable Gurney and Moehring gifts, not yet catalogued, and a few smaller lots laid aside for work more pressing. The scant space in the Library for handling large gifts of books obliges the staff to work on such gifts in small lots. Any display of them on tables in large masses is prevented by the recurrent arrival of invoices of fresh books which require prompt attention.

ESTIMATED AMOUNT IN DOLLARS OF ORDERS SENT TO AGENTS.

	1886–87.	1887–88.	1888–89.	1889–90.	1890–91.
American	987	1,300	1,200	895	724
English	2,380	2,150	2,500	2,043	1,334
French	1,282	1,035	910	1,234	585
German	2,170	1,950	2,450	1,401	1,139
Italian	225	112	325	200	111
Scandinavian	21	56	106	52	50
Totals	7,048	6,805	7,459	6,276	4,161

Lesser agencies are not noted in this table, but are included in the totals. The division among agents gives only an approximate representation of division by languages, since books in all languages may be bought in London, as Spanish and South American books usually have been, and Slavic books are mainly bought through the German agency. We usually buy more titles in German than in any other language.

The following table indicates for five years past the extent and variety of orders dealt with by the Ordering department, and shows that more than 14,000 slips are arranged and kept in mind in the daily work of those in charge of this department: —

Order slips on hand October 1.	1887.	1888.	1889.	1890.	1891.
Book orders out	1,539	2,112	2,875	1,242	2,350
Continuation orders out	1,819	1,951	2,163	2,272	2,400
Total active orders .	3,358	4,063	5,038	3,514	4,750
Cancelled orders. . . .	6,400	6,800	7,200	7,675	8,600
Deferred orders	488	541	533	1,488	942
Countermanded orders .	. .	. .	. .	943	. .
Slips for reference use .	136	124	130	234	. .
Slips of little value . . .	76	76	76	76	. .
Grand total	10,458	11,604	12,977	13,930	14,292

The estimated cost of continuations, which is a fixed liability for our book funds, — though only about one-half of the charges is likely to be actually incurred each year, owing to the irregularity of such serials, — has been growing rapidly of late years, as will be perceived from the following table: —

It must be understood that the figures in a column have no relation to other figures in the same columns, for books may be recommended in one year and ordered in the following year, etc.

Mr. Tillinghast says in his report, while referring to the reduction of orders for the College Library: "The comparative small amount of business done by the Ordering department for the College Library was more than offset by the extraordinary demands made upon us by new class-room libraries. During this year class-room libraries were formed in the Classical, Philosophical, Historical (as distinct from American history, which already had a class-room library), and Musical departments. The result was that while we ordered but $4161 in books for Gore Hall, we ordered $5330 for the departmental and class-room libraries, of which amount $3293 was ordered for the Classical department library. For this amount of work, as for the cataloguing involved in it, no charge is made against these libraries; but a division of charges for freight is made, and the share of these libraries in it is paid by each."

GIFTS.

Years.	Vols. and pamphlets.	Proved to be duplicates.	Put on shelves.
1883–84	11,868	4,348	7,520
1884–85	12,784	5,288	7,496
1885–86	8,538	2,554	5,984
1886–87	7,989	2,437	5,544
1887–88	9,649	2,506	7,143
1888–89	9,815	2,835	6,980
1889–90	12,073	3,354	8,719
1890–91	9,992	2,257	7,735

Mr. Henry C. Badger, Curator of Maps, has made the following report: —

The cataloguing of the large collection of maps in portfolios was begun nearly seven years ago. A year was spent at first in bringing together the maps, then dispersed in many parts of the Library, as well as in arranging the various editions and parts of maps and placing them in proper portfolios, duly stamped and numbered. Something more than a year was then consumed in preparing a subject index of the maps, which has since been bound in four volumes. This required a study of topics and of the ground covered by each map, not only those contained in the portfolios but also those in atlases, and such single maps as stand on the shelves as books or are kept on rollers. Maps in books, if only illustrative of the text, were not included. No beginning has yet bee the uncounted thousands of such maps ; be done.

Probably in no other particular does th all other libraries in America as in its ca older maps. The collection of the later has many deficiencies, and a list of the The Map department is without any sp growth ; and without this aid it is likely nence among such repositories. It mig Library that it should keep pace with mo out such help it cannot. The field is government map of Germany on a sca sheets. If the geologic and geodetic s now in progress is ever completed, it ma sheets the entire number of maps now in accommodation for the map collection in tion is inadequate, and the problem of be and showing maps is but one of the de weight, for an enlargement of the Librar

The collection of roller maps number volumes ; and there are probably a thous in cases, which are now enumerated amo

In addition to the subject index which draft has been made of a catalogue of th folios. This list shows 7939 titles, embra 872 are duplicates. In 1884, 85 titles bound up, because of their continuity with the atlases.

Mr. John H. Storer, Curator of Coins first draft of the work of cataloguing the

In closing this report I may revert to emphasized in my reports for the last two the present Library building in regard to furnishing facilities for their use.

We have reached a point when imme avoid in a year or two a confusion almost ment of that portion of the Library now fused to a degree that is perplexing for ou This results from the makeshifts to which classifications to find room for accessio that at present this confusion works greatly to the Library's detriment. By actual note of the average time necessary to get a book three years ago and to-day, it is evident that nearly double the delay is experienced now. It is feared that another year will double the present delay. There are 600 shelves already full, and the increase of the books assigned to their classifications requires some temporary expedient. The stack would hold perhaps 60,000 more volumes, but the space, sure to be demanded for their proper classifications, is not conveniently placed for the increase of other classifications. A range being the space between upright partitions, there are five ranges full to overflowing in the section given to American books, and these books increase at the rate of two ranges a year. There is a similar exigency in the rows (one side of a passage, divided into nine ranges) devoted to Folk Lore.

The rough classifications which we are using for books (largely of Science) which are ultimately to find place in the old Gore Hall when remodelled, have outgrown the temporary places which we can find for them.

There are eighty ranges yet left without a book and they will hold 16,000 volumes packed tightly; but they are not available for relief without increasing the disorder in the grouping of the Library to an extent which will check seriously its usefulness.

Of the current accessions to the Library about two fifths find their lodgement in the stack, where books are considered to be permanently placed; and three fifths go into the temporary classifications. These have to be shifted about from time to time for room, but would find permanent locations if the Library was enlarged. We add on an average about 12,000 volumes a year.

This statement leads to the conclusion that two years time will bring us to an absolute repletion; and the embarrassment now existing from being so near that condition increases day by day. I see no way to avoid the calamity, which will be upon us before long, except by some immediate action to increase the capacity of the building.

There is some space in the cellar of the original Gore Hall, which could be used, though not conveniently, and in this way perhaps 10,000 volumes, packed closely, could be provided for; but without artificial light the books could not be found when wanted.

In respect to table and chair room, we have exhausted all expedients without satisfying the demand. Some relief has been got by the creation of class-room libraries, but these are maintained in scattered places with more or less hazard to the property. A large *reading-room, lighted from* windows placed so high up as to reduce the English agrostologist, Col. William Munro, presented by W. T. Thiselton Dyer, Director of the Royal Gardens, Kew, and about 2000 specimens of grasses selected from the Thurber Herbarium, of which mention was made in the last report. The total number of specimens received from all sources is about 13,000. The number of specimens that have been mounted upon sheets and distributed into the herbarium cases is 10,595. In addition there has been received from Kew a considerable portion of the large herbarium left by the late John Ball of London, to which reference was made in the last report, and the work of distribution and selection has been commenced. Arrangements have been made by which this distribution will involve little or no expense to this Herbarium.

The general condition of the Herbarium is, on the whole, as satisfactory as last year. The continual increase of material is gradually filling the cases to repletion, but the necessity for additional room is not immediate. To protect the collections from the ravages of insects the sole reliance until very recently has been the poisoning of the plants with corrosive sublimate, or, within the last few years, with arsenic acid, a process requiring no little time and labor. This has, however, in many cases proved ineffectual, and there is also the danger of serious injury to the health of any persons engaged in the Herbarium who may be specially susceptible to mercurial or arsenical poisons. On these accounts it has seemed to me best to give up this method of treatment altogether, trusting rather to the tightness of the cases for security.

The library has been increased by 165 volumes and 167 pamphlets. Of these additions 84 volumes were obtained by purchase. During the past year the library has been to a large extent rearranged by subjects, and there has also been much done in the way of cataloguing and indexing by authors and subjects, and in the indexing of illustrations. This work will be continued as circumstances may permit.

The publications from the Herbarium have been as follows: —

BY THE CURATOR:

On the genus *Eriogynia*. Bot. Gazette, 15. 241–242, with plate.

The relation of the Mexican Flora to that of the United States. Proc. Amer. Assoc. 39. 291–292.

Description of some new North American species, chiefly of the United States, with a revision of the American species of the genus *Erythronium*. Proc. Amer. Acad. 26. 124–131.

Descriptions of new Mexican species, collected chiefly by Mr. C. G. Pringle in 1889 and 1890. Same, 26. 131–158.

Upon a wild species of *Zea* from Mexico. Same, 26. 158–161.

Notes upon a collection of plants from the Island of Ascension. Same, 26. 161–163.

question of labels for the plants became prominent during the summer; many of the older ones have been replaced by simpler sorts provisionally, but no decision has been reached as to the most useful and practicable. The devices which seemed promising a few years ago have been disappointing under the trying conditions of our climate. It will scarcely seem credible that the strong iron labels which were adopted in a large number of the orders a short time ago have proved less satisfactory than any other kinds, because they are used as projectiles by boys who invade the Garden in search of nuts. The most strenuous and severe measures on the part of the foreman have been insufficient to stop this wilful mischief. It is not pleasant to refer to this matter, but it is now placed on record to justify the employment of a police officer whose services will be asked for if next Autumn there should be a repetition of the annoyances of the current year.

As an offset to this abuse of the privileges of the Garden, mention should be made of the large numbers of orderly people who visit it during the pleasanter days of the year, and who appear to appreciate fully the advantages which are placed within their reach. It is not unusual to find in the Garden considerable numbers of school children accompanied by their teachers who are making good use of the specimens in flower. In this way, the Garden has been able to carry out the wishes of certain members of the Overseers' Committee. It should be widely known that to proper applicants for botanical specimens in the Spring and Summer, such specimens as can be spared without detriment to the Garden or to the classes in the University, are freely given on application to the foreman.

No important changes in the selection or arrangement of the plants out of doors are contemplated the coming year.

The greenhouses have required extensive repairs the past season. The moisture and heat of the tropical houses render the wood of which they are constructed very susceptible to decay, especially at the joints, where repairs are almost out of the question. The house for economic plants, built twelve years ago, has been largely reconstructed on the old site. When the time comes for complete reconstruction of this and the other houses, iron will be employed, it is hoped, for the framework wherever practicable. The heating apparatus arranged some years ago with great care is perfectly satisfactory in every respect. The repairs are comparatively slight and the danger from the sudden breaking of any part of the system guarded against in every way. By the method which is employed we are able to keep a very small fire for warm days, which can be quickly increased when severe weather is threatened.

laboratories enable us to begin practical work much earlier and to carry it on with greater thoroughness than ever before.

"The Summer School of Botany continued for five weeks, opening Monday, June 28, and closing Saturday, August 1. It was attended by 21 students. The course included the usual laboratory work on vegetable anatomy, morphology and classification, supplemented by lectures on those subjects and on the principles of vegetable physiology, all carried on at the laboratories and lecture-room at the Botanic Garden.

"Very large quantities of material were required in these studies, and this the Garden supplied in abundance. In a systematic study of orders, with the more advanced students, it was found possible to take them very nearly in the sequence and combinations demanded by their natural relationships, something which can be done only when the supply of material is not only abundant but well arranged and well proportioned. A supplementary course, consisting of practical work on the principles and methods of vegetable histology, was given to about twelve students, in the afternoons, at the Botanical Museum."

Professor Farlow presents the following statement relative to the work in Cryptogamic Botany: —

"The courses Botany 2, 4, and 12, hitherto given in the Zoölogical Wing of the Museum, were in 1890–91 transferred to the new Botanical Wing, and although there was some confusion for a few days at the opening of the term in consequence of the removal to new quarters, the laboratory work did not differ in amount from that given in previous years. Through the kindness of the curator, Mr. Agassiz, permission was given to hold the lectures in Botany 2 in the Zoölogical lecture-room, the large Botanical lecture-room not being finished at the time. Botany 2 was taken by 36 persons, including 10 Seniors, 5 Juniors, 13 Sophomores, 2 Freshmen, 3 Scientific, 2 Special and 1 Graduate students. The work was conducted on the usual plan by Dr. W. A. Setchell and myself. Botany 4 was taken by 12 students, of whom 5 were Graduates, 3 Seniors, 1 Junior, 1 Sophomore, and 2 Scientific students. Dr. W. C. Sturgis acted as assistant in this course. Botany 12 was taken by 9 Graduate students. In this course the following papers representing work in original research were prepared for publication: —

Preliminary Notes on the Species of *Doassansia*, by Dr. W. A. Setchell. Published in Vol. XXVI., Proc. Am. Acad. Arts and Science.

Concerning the Life-history of *Saccorhiza Dermatodea*, by Dr. Setchell. Published in Proc. Am. Acad. Arts and Science.

glass of plants and the parts of flowers. Only after repeated refusals, which I did not then understand, did they consent to construct the models of certain orchids and compositae. The exquisite beauty and botanical accuracy of the models in this first shipment left no room for doubt that the experiment was successful. Means were placed at my disposal by Mrs. Charles E. Ware and Miss Mary L. Ware for an additional order, which proved to be in all respects more satisfactory than the first. At this time it was decided to arrange for the production by the artists of as many as they were willing to contract for, all of the specimens to be selected for the demonstration of the types of American plants. At the beginning of 1890 it was evident that a change must be made in the contract. This change was effected during a special journey which I made to Dresden in May of that year. The artists found it impossible to construct our models of plants during half the year and the models of marine animals during the remainder of the year. They said that they must give up either one or the other. By the great generosity of Mrs. and Miss Ware, I was able to arrange satisfactory terms by which the artists contracted to prepare for our Museum models of the specimens selected by us, and to give us their whole time for the term of ten years. The last invoices are more successful than even the former ones, and the activity of these remarkable artists has been greatly increased by their exclusive devotion to a single line of work. It has been only within a comparatively short time that I have discovered the cause of the great reluctance of the elder Blaschka to the undertaking at the outset. It appears upon inquiry that he had constructed a few models of plants before beginning the preparation of the animal models to which he owes his wide celebrity; but these models of plants were, he thought, not appreciated by the persons for whom he had made them. The first set of models passed through various vicissitudes, and finally found a home in the Natural History Museum in Liege, where they were at last destroyed by fire. The artist did not have courage to undertake the experiment again, when he was succeeding so well with his animal models. He regards it as a pleasant turn in his fortunes which permits him to devote all of his time to the subject of his earliest studies. Both the artists consider it an important feature of our contract with them that they are to be engaged in the construction of a botanical collection which will be unique.

The number of models sent to us annually is about 120, together with three times as many details illustrating structure. It becomes, therefore, a question of importance, what room shall be assigned to the collection. After careful consideration on the part of the President of the University and Mr. Agassiz it has been decided to devote ing to $7000. The balance will be sufficient to place the entire collection in a condition of efficiency and safety.

When this amount has been secured and judiciously expended the botanical collections in Phanerogamic and Cryptogamic Botany will be ready for public exhibition. Until that time, only the Ware collection of glass models will be accessible to visitors.

The Director desires to express his thanks to the Overseers' Committee on the Botanic Garden and Herbarium, and to the Committee on Instruction in Botany, for renewed evidence of their interest in the Botanical Department.

GEORGE LINCOLN GOODALE, *Director*.

NOVEMBER, 1891.

THE ARNOLD ARBORETUM.

TO THE PRESIDENT OF THE UNIVERSITY:

SIR, — I have the honor to submit the following report of the condition and progress of the Arnold Arboretum during the year ending July 31, 1891: —

Substantial progress has been made by the Park Commissioners of the city of Boston in carrying out their contract to build the roads in the Arboretum; and these are now all practically subgraded and ready for the stone surface. The road slopes are being made by the city as rapidly as possible, and there is reason to believe that a large part, if not the whole of the driveways, will be finished and open to the public before the end of the year 1892. The completion of the roadways will necessitate a large amount of planting during the next two or three years, although the arrangement of several groups of trees in the early part of the sequence must be postponed until a scheme for draining the low, wet meadow near Centre Street can be perfected and carried out. About twenty-five acres on that side of the Arboretum near its principal entrance, and lying along the parkway of the city, cannot be used until a proper outlet into Stony Brook is made for the surface water which now covers it to above the road levels for several weeks at a time every winter and for several days after heavy summer rains, and the whole territory is underdrained. The coöperation of the city of Boston and legislative authority will be necessary to accomplish this.

Some three hundred trees were planted during the year to complete groups which had been only partially planted previously, and to place the following genera in their permanent positions: Acer, Alnus, Taxodium, Taxus, Tsuga, Pseudotsuga, Sciadopitys, and Pseudolarix.

commodious quarters, and to increase immensely the importance of the Arboretum as a station for scientific investigation and popular instruction.

Plans have been prepared, a site — close to the principal entrance to the Arboretum from the city parkway — has been selected, and the building will probably be occupied before the end of the next college year. It will be a hundred feet long and thirty-nine feet wide and will consist of a high basement, two stories, and a high attic. The lower and principal story will be divided in the middle by an entrance-hall which will open on each side into a museum-room, and in the rear into a small work-room in which is to be the stair shaft. The second floor will be divided into an herbarium-room, a library, and four work-rooms. By this plan the public can be admitted to the museum without interfering with the people working in the herbarium and library, which, by the location of the stairs, can be entirely shut off from the principal rooms in the lower story. Space will be provided in the two museum-rooms to display a selection of tree products; the herbarium-room will allow the present herbarium of the Arboretum to grow to three times its present size without being crowded; and the library will hold twenty thousand volumes. Abundant storage room will be provided in the basement and in the attic, which will be well lighted by high dormers.

The building will be made of common hard-burnt brick with brown stone window-sills, a moulded brick cornice, and a slated roof with copper ridge-rolls. The first floor over the basement, in which is to be placed all the heating apparatus in the building, will rest on a series of brick arches turned on brick cross-walls; the construction of the upper floors is of wood with joists resting on iron beams and securely built into the brick walls at the ends. Iron stairs enclosed in a brick shaft, and the isolated position of the building, should with this construction make it practically fire-proof. It will be heated by indirect radiation from coils placed in the basement and surrounded by galvanized iron boxes through which air is drawn from the outside and delivered through metal ducts built into the walls. A brick ventilating shaft will be carried up through the building enclosing the smoke flue from the boiler, and from the different rooms ventilating pipes will be taken into this shaft in which the heat from the flue will maintain a constant upward current.

During the year the second volume of "The Silva of North America," bringing the work down to the end of the *Sapindaceæ*, has been published; and in the fourth volume of "Garden and Forest" many of the observations made during the year by the staff of the Arboretum have been recorded.

C. S. SARGENT, Director.

already heavily burdened, and although the duty is one which they may assume with alacrity in order to further a favorite study, yet the burden is becoming every year more onerous and provision must soon be made for such extra work. During the past year the advanced work in the Laboratory has been reasonably successful and under the title of "Contributions from the Chemical Laboratory of Harvard College" the following papers have been published in the Proceedings of the American Academy of Arts and Sciences. They are here enumerated in order of publication: —

1. A New Meteoric Iron from Stutsman County, North Dakota, by Oliver W. Huntington.
2. On Chlorsulphopyromucic Acids, by Henry B. Hill and Walter S. Hendrixson.
3. The Prehistoric and Kiowa County Pallasites, by Oliver W. Huntington.
4. On the Products obtained by the Action of Nitric Acid upon Bromtrinitrophenylmalonic Ester, by Charles L. Jackson and W. B. Bentley.
5. A Revision of the Atomic Weight of Copper. Fourth paper, by Theodore W. Richards.

A Summer School was held as usual between July 8 and August 15 under the superintendence of Mr. Joseph Torrey, who was aided by a corps of competent assistants. The courses and methods of instruction were essentially the same as in previous years and about fifty students were in attendance. The students were for the most part teachers of secondarys chools and the further experience gained at this session confirmed the opinion expressed in the last report, in regard to the usefulness but necessary limitations of this Summer instruction.

At the date of the last report, the new mineralogical wing of the University Museum had been erected, and the collections removed to it from Boylston Hall, and temporarily stored in one of the unoccupied rooms. The construction of the new cases and the adaptation of the old ones required more time than was anticipated, and the exhibition rooms were not ready to receive the collection until April. The next three months were occupied with the rearrangement of the specimens, which involved a very large amount of labor which devolved for the most part on Dr. Huntington. The preliminary arrangement was finished a few weeks before Commencement and the new Museum opened to the public. Much still remains to be done in the details of classification and the verification of the card catalogue; but this must be a work of time.

The furnishing of the building cost more than the first estimates; but the liberality of several of the original subscribers, who increased their subscriptions, and an appropriation of one thousand dollars by the Corporation of the University, enabled us to carry out our plans

THE JEFFERSON PHYSICAL LABORATORY.

To the President of the University:

Sir, —The policy of the department has changed radically in regard to the expenditures for apparatus. Formerly this University, in common with other American colleges, sent large orders for apparatus to England, France, and Germany. This policy is still pursued in most American institutions of learning. Between the years 1870 and 1880 the foreign orders of Harvard University for physical apparatus averaged at least $1500 a year. During the past three years the foreign orders have not exceeded $100 a year. This change has been due to the increase in the laboratory method of instruction in physics and the practical abandonment of the lecture method. The physical cabinet has not grown by the addition of instruments for lecture demonstrations. On the other hand, the four principal laboratory courses have received large additions of apparatus for quantitative measurement.

The arrest in the growth of the physical cabinet will probably continue in the future, for the new professions which require a knowledge of Physical Science demand the accurate knowledge which can only be obtained in laboratories. The aim of the department during the past four years has been to systematize the laboratory courses. It was found that the apparatus necessary for this purpose could not be obtained abroad or in this country, and it was necessary to devise new forms of instruments and to make the models of these instruments in the Jefferson Physical Laboratory. To this end the machine-room of the Laboratory has been supplied, so far as the resources of the Laboratory permitted, with tools and materials in order that the professors and assistants might have suitable facilities for the work of designing and making models for apparatus. The designs and models were afterwards given to instrument makers in Boston to work from. A critic seeing a professor working in this machine-room, with hands covered with oil and filings, remarked "that it was a picture of a $4000 man doing the job of a $1000 man." This would be a true criticism if the professor undertook to make the finished instruments. No one can, however, design an economical and practical instrument unless he undertakes to make the rough model. Thinking grows with the use of the fingers, and the first thought is generally thrown aside when the contact with the brass and the tools shows that it is a poor thought. A physicist who is not a mechanic may thus prove an expensive acquisition to a university, for his ideas submitted number of students attending these lectures varied from one hundred to two hundred. It is probable that all who could receive benefit from these lectures attended them. It is the belief of the Director that popular lectures in physics have a very limited educational value, for in order to make the lectures popular the difficulties of the subject must necessarily be glossed over or concealed. In certain cases, however, such lectures awaken an interest in the subject.

Lectures were given on the following topics: —

Magnetism.
Electromagnetism.
Sound, with especial reference to the Telephone.
Optics, with especial reference to Photography.
Optics, with especial reference to Spectrum Analysis.
Prime Movers.
Electric Lighting.
Electric Railways.

The Director was occupied during the year on an investigation of the effect of very rapid electric oscillations on magnetism. It has been stated by eminent authorities that oscillations of the duration of a millionth of a second are not affected by the magnetic nature of the conductor over which they pulsate. It was found, however, that this was an erroneous conclusion. A marked effect of magnetism was discovered. This result has recently been confirmed by Professor J. J. Thomson, the director of the Cavendish Laboratory, Cambridge, England — who, however, pursued a different method from that adopted in this Laboratory.

The work on Electrical Oscillations, published in 1889–90, was also repeated with new apparatus, and the previous results were confirmed.

Professor B. O. Peirce has published during the year various mathematical papers, among which may be mentioned the following: —

On some theorems which connect together certain line and surface integrals.
On some simple cases of electric flow in flat circular plates.

Professor Hall has been occupied upon an investigation of the conduction of heat in the cylinder walls of the steam engine. The preliminary results of this work have been published in the minutes of the American Institute of Electrical Engineers and the full paper will also appear in the Proceedings of the American Academy of Arts and Sciences.

Mr. W. C. Sabine, Instructor in Physics, has been engaged during the year on investigations of the best form for various measuring instruments, among which may be mentioned Ballistic galvanometers larger scale of the bright stars visible in Cambridge. These photographs show the condition of the sky from 1886 to the present time and form the only collection of the kind which exists. The building in which they are stored is of wood and if a fire broke out would be destroyed in a few minutes. Fortunately, there is now a prospect that this want may be supplied by the erection of a plain brick structure. Subscriptions to the amount of $7200 have been promised towards a fund of $10,000 which is the estimated cost of the required building.

It is hoped that the remaining $2800 can be secured before long and that the foundation can be laid early next spring, so as to protect the plates from danger at as early a date as possible.

OBSERVATORY INSTRUMENTS.

East Equatorial. — The observations with this instrument have been partly photometric and partly micrometric. Twenty eclipses of Jupiter's satellites have been observed photometrically, making 471 since 1877. One of the eclipses observed this year belongs to the opposition of 1890–1891 and completes a series of 452 eclipses observed during a period of rather more than one revolution of Jupiter. This series will be separately reduced and published. The systematic observation of seventeen circumpolar variable stars of long period has been continued, as in last year. Special attention was paid to the stars when they were faint. The relative brightness of the stars was determined by Argelander's method and a direct estimation was also made in each case. The total number of observations is 560 by each of these methods. Relative estimates of brightness were also made with the finder when the star was not too faint. Seventy series of observations of the relative brightness of the comparison stars for these variables were made, and fourteen series of measurements with the wedge photometer. Twelve zones comprising 403 of the fainter stars contained in the Durchmusterung were observed with the same instrument, each star being measured three times. Besides other miscellaneous observations, micrometric measures have been made of the positions of all the fainter comparison stars of the circumpolar variables and of the following comets: Comet 1891 IV. on 7 dates; 1891 a on 3 dates; 1884 III. on 6 dates; 1891 d on 8 dates. All of the observations, except a part of those of Jupiter's satellites, have been made by Mr. Wendell.

Meridian Circle. — The reduction of the observations made with this instrument by Professor William A. Rogers continues under his supervision. The printing of the zone catalogue, as shown under the head of Publications, is completed, and the manuscript of the stars and provides a means of determining the true brightness of the fainter stars. A prism covering the objective enables the spectra of the fainter stars to be photographed. Similar work on the Southern stars has been done in Peru with the Bache telescope, 1224 photographs having been taken. The examination of these plates by Mrs. Fleming has shown that eight variable stars, R Cancri, S Serpentis, R Herculis, S Herculis, R Cygni, R Aquilae, and V Monocerotis, in addition to the thirty previously announced, have the hydrogen lines bright in their spectra. Five new variables have been discovered during the year by means of this property. Bright lines are also seen in the spectra of R Coronae and g Herculis which apparently are not due to hydrogen. Two known variables, R Sculptoris and U Cygni, have been shown to be of the fourth type and two fourth-type stars have been discovered to be variable. The number of stars of the fifth type, that is, having bright lines in their spectra like those discovered by Wolf and Rayet, has been increased by nine. The total number now known of these objects is 37, 27 of which have been found at this Observatory. All of them are situated very near the central line of the Milky Way which fact has led to the detection of several previously unknown. The hydrogen line F was shown to be bright in ν Sagittarii and ν Cygni. DM. —12° 1172, hitherto supposed to be a star, is shown by the photographs to be a planetary nebula. Two stars, DM. —10° 513 and DM. —10° 5057, have spectra of the fourth type in which, however, the blue light is well shown so that they do not have the usual characteristic red color. Well marked spiral rays are visible in a photograph of N. G. C. 1566.

The number of photographs taken with the eleven-inch Draper telescope is 1089. Photographs have now been obtained of the spectra of all the stars visible in Cambridge and bright enough to bear the dispersion used with this instrument. A large number of photographs were taken of β Aurigae to determine the form of the orbit of this curious binary. During December, 1890, this star was followed throughout every clear night so that the period could be determined with precision by comparison with similar observations made in 1889. By moving the telescope in right ascension every twenty minutes several spectra were obtained on each plate. In all, 184 spectra of this star were photographed. 106 photographs were also taken of ζ Ursae Majoris to study the apparent irregularity in the time at which its lines are double. In 10 cases only are the lines certainly double. An interesting discovery was made by Mrs. Fleming, that the bright lines in the spectrum of β Lyrae change their position in a manner somewhat like the doubling of the dark lines in

An expedition under the direction of Professor William H. Pickering left Cambridge in December, 1890, and established a station about three miles northwest of Arequipa, where the thirteen-inch equatorial has been mounted. This station has an elevation of a little over 8000 feet and has a nearly cloudless sky during a large part of the year. The air is remarkably steady, the images of the stars are small and round and the diffraction rings, seldom seen with large instruments, are clearly visible. Even with high powers the fluctuations of the images is very slight. In fact, at this station the limit to observation will probably be the size of the instrument instead of, as at other observatories, the condition of the air. Although the aperture of this instrument is only thirteen inches, it appears to be the largest refracting telescope in use in the southern hemisphere, while about thirty larger telescopes are mounted in the northern hemisphere. Since all of these instruments are north of +35° nearly one quarter of the entire sky, and that containing many objects of the greatest interest, has never been studied by a refractor of the highest grade. For both these reasons an excellent opportunity is afforded to add to astronomical discovery by the erection of a telescope of large size at this station. It is hoped that patrons of astronomy will consider the advantages of erecting a large telescope where it will be kept constantly at work, where the sky is clear a large part of the year, where the condition of the air is probably more favorable than at any other existing observatory, and where a large part of the sky could be examined for the first time under such satisfactory conditions.

Photographs have not yet been obtained with the thirteen-inch telescope, but it is hoped that its advantages for this kind of work will be as great as for visual observations. The expense of establishing this station was much greater than had been anticipated, since it was necessary to erect a stone dwelling-house for the observers. A considerable advance from the future income of the fund has accordingly been required. Important aid was rendered to the expedition by many residents in Peru. Mr. MacCord, Superintendent of the Mollendo Railway, should be especially mentioned for his hospitality to the observers who resided with him while the new house was in process of erection. Without his aid the establishment of the station would have been extremely difficult. Two interesting expeditions have been made in Peru. One of them by the courtesy of Mr. Anderson, American Minister to Bolivia, was to Tiahuanuco and the sacred islands of the Incas on Lake Titicaca and led to results of much archaeological interest. The other was to the summit of El Misti, a nearly extinct volcano about nineteen thousand feet high.

The Time Ball dropped correctly on 285 week days. It is probable that this department of the work of the Observatory will be abandoned shortly since similar signals furnished by the U. S. Naval Observatory are now offered to the public through the Western Union Telegraph Company.

Telegraphic Announcements. — The distribution of telegraphic announcements of discovery has been continued under the management of Mr. Ritchie. During the year telegrams concerning the discovery of nineteen asteroids and seven comets, and others relating to two orbits and to four positions of comets have been sent out, requiring in all 624 telegrams and 12 cable messages.

Publications. — The zone catalogue of stars between the declinations +55° 10′ and +49° 50′ has been printed, and the introduction has been sent to the printer, as stated above in describing the work done under the direction of Professor Rogers. This catalogue, with its introduction, will form Volume XV., Part II., of the Annals of the Observatory. Volume XIX., Part II., will be completed by the publication of a discussion of atmospheric refraction, the materials for which are derived from photographic observations. This work has been in progress during the year, but is not yet fully ready for printing. Volume XXI., Part II., mentioned last year as about to be published, has been printed and distributed. It contains the observations of the New England Meteorological Society for 1889, with essays by officers of the Society on climate and sea breezes. Volume XXIII., Part I., containing a description of the observations with the meridian photometer in the years 1882 to 1888, inclusive, has also been printed and distributed. Volume XXIV., containing the catalogue of 20,982 stars derived from these observations, which was printed last year, has since been distributed. Volume XXV. is not yet undertaken. Volume XXVI., Part I., which contains a description and discussion of the observations made with the Bache photographic telescope during the years 1885 to 1889, has been completed; and Volume XXVII., printed last year, has likewise been distributed. It forms part of the Henry Draper Memorial, and contains a catalogue of the spectra of 10,347 stars, to be known as the Draper Catalogue. Volume XXX., Part I., also printed last year, has been distributed, as has Part II., of the same volume, more recently printed. The whole volume forms a continuation of Volume XX., and contains meteorological observations made at the Blue Hill Observatory during the years 1889 and 1890, with a summary of observations for the five years ending with 1890. Volume XXXI., Part I., will soon appear, 130 pages being already in type. It forms

Astronomical Expedition to Peru. By M. Fleming. Ibid. x. 105.

Stars having Peculiar Spectra. New Variables in Aquarius and Delphinus. By M. Fleming. Ibid. x. 106.

New Variable Star in Camelopardalis. By M. Fleming. Ibid. x. 152.

The New Red Star in Auriga. By M. Fleming. English Mechanic, liii. 50.

Objects of Interest on Spectrum Plates and Two New Variable Stars in Perseus. By M. Fleming. Astronomische Nachrichten, cxxvi. 163.

Stars having Peculiar Spectra. New Variable Stars in Aquarius, Delphinus, and Camelopardalis. By M. Fleming. Ibid. cxxvii. 5.

New Planetary Nebula. DM. —12° 1172. By M. Fleming. Sidereal Messenger, x. 240.

Stars having Peculiar Spectra. New Variable Star in Sagittarius, R. A. $19^h\ 51.8^m$ Dec. —42° 7′. By M. Fleming. Astronomische Nachrichten, cxxviii. 11.

Stars having Peculiar Spectra. New Variable Star in Lacerta. DM. +39° 4851. By M. Fleming. Ibid. cxxviii. 121.

Aid to Astronomical Research. By Edward C. Pickering. Reprinted in Sidereal Messenger, ix. 473.

Close Binary Stars. By Edward C. Pickering. Sidereal Messenger, x. 5.

A Fifth Type of Stellar Spectra. By Edward C. Pickering. Astronomische Nachrichten, cxxvii. 1.

The Discovery of Double Stars by Means of their Spectra. By Edward C. Pickering. Astronomische Nachrichten, cxxvii. 155.

Spectrum of β Lyrae. By Edward C. Pickering. Astronomische Nachrichten, cxxviii, 39. Reprinted in The Observatory, xiv. 341.

The Draper Catalogue. By Edward C. Pickering. Nature, xliv. 223.

EDWARD C. PICKERING, *Director.*

THE MUSEUM OF COMPARATIVE ZOÖLOGY.

To the President and Fellows of Harvard College: —

During the past year the usual courses of instruction have been given at the Museum in Zoölogy by Professor Mark, Dr. Slade, and Mr. Parker, assisted in the Laboratory work by Messrs. W. M. Woodworth, Ritter, and Hubbard.

Professors Whitney, Shaler, and Davis, and Dr. J. E. Wolff gave courses of instruction in Geology, Palaeontology, Physical Geography, and Petrography. Messrs. Harris, J. B. Woodworth, Cobb, and Tarr were the Assistants in the Undergraduate instruction of the Geological Department.

Professor Farlow's report upon the Botanical part of the introductory course of Natural History will appear in the report of the Botanical Department.

The Geological Section of the Museum has been occupied duri
the past year, and its laboratories and lecture rooms have be
found well adapted to their purpose. No progress has as yet b
made in the equipment of the Geological and Geographical Museu
but the rooms are used to establish a connection between the Exhi
tion Rooms of the Museum of Comparative Zoölogy and the Botanic
and Mineralogical Collections of the University Museum.

An extensive addition has been made to the Newport Marine La
oratory, so that there is now ample accommodation for eight advanc
students, beside the space occupied by myself and assistant. Ad
tional room is thus provided for the housing of books, drawings, a
other records in use at the Laboratory. Messrs. Woodworth, Dave
port, Smith, Ward, Nickerson, and Lucas spent some time at t
Newport Laboratory, either collecting material for future investig
tion or carrying on special work on the embryology of Annelid
Bryozoa, and Acalephs. Mr. Woodworth also passed a few days
Newport before the opening of the season in putting the Laborato
in order for work.

We have to thank Colonel Marshall McDonald, United States Fi
Commissioner, for facilities granted our students in connection wi
their work by the Fish Commission Station at Wood's Holl.

There have been no changes in the Exhibition Rooms beyond t
additions made to fill gaps existing in our series. The collectio
open to the public remain in a satisfactory condition and the intere
in the exhibit does not appear to diminish, judging from the co
stantly increasing number of visitors.

The Pacific Room is little by little preparing for exhibition, and
hope to open it to the public as soon as we can make a reasonabl
interesting exhibit of the fauna of some of its groups of islands. W
have been for some time accumulating collections from the Sandwic
Islands, the Galapagos, and the Feejee Islands.

The most important addition to our Exhibition Rooms has been t
mounted skeleton of the fine Sperm Whale, obtained through Pr
fessor Ward, mentioned in my last report. This skeleton has bee
suspended from the roof of the large Exhibition Room devoted to t
Systematic Collection of Vertebrates, and finds its place naturall
by the side of the two other large skeletons of whales similarl
placed.

The magnificent series of Pampas Fossils obtained by Profess
Ward have been mounted by him and safely moved to Cambridg
from Rochester. They occupy a part of the central floor space
the rooms devoted to the Tertiary Faunae. A few other specimen
of extinct Vertebrates have been moved to the same rooms, so that

soon as the specimens are labelled it will be possible to open two of the Palaeontological Exhibition Rooms to the public. They will, however, contain at first only a small part of the collections they are intended to house.

The collections of the Museum continue in good condition. Owing to Dr. Hagen's prolonged ill-health he has been able to give but little time to the Museum, and has been unable to make his usual report. The collections have been kept in excellent condition, but of course, owing to his absence, they could not be placed at the disposal of specialists as has always been the case heretofore.

Mr. J. A. Allen, of the Museum of Natural History of New York, has returned the collection of Muridae which had been sent to him for study.

Professor Harrison Allen of Philadelphia has returned the collection of Bats sent to aid him in the preparation of a monograph on the family for the Smithsonian Institution.

Messrs. Scott and Osborn have returned an additional invoice of the collection of Western Fossils lent to them.

Professor S. I. Smith of New Haven has returned the part of the "Blake" Crustacea remaining in his possession.

Professor Solas of Dublin has sent back a few of the types of the "Blake" and other Sponges.

Messrs. Scudder and McMurrich have returned drawings of Lepidoptera and of Actiniae which had been lent to them for examination.

We have received from Messrs. Wachsmuth and Springer a number of Palaeozoic Crinoids; from Mr. Charles Chilton, a collection of New Zealand Crustacea; from the Zoölogical Museum of the University of Copenhagen, a collection of Fishes and Invertebrates from the Kara Sea made by the Expedition of the "Dijmphna"; from the Paris Museum, a collection of Deep-sea Fishes, mainly from the "Travailleur" and "Talisman" Expeditions; from Mr. Arthur H. Gordon, an interesting collection of Lepidoptera from Central China; and from Lieut. Commanding J. F. Moser, a collection of Corals from the submarine cable between Key West and Havana, illustrating the rate of growth of corals. (See the Museum Bulletin, Vol. XX. No. 2.)

In addition to the specimens purchased from Professor Ward we have also filled a few gaps in our collection of Reptiles, mainly for the Exhibitions Rooms.

With the exception of an exhaustive report on the Paguridae of the "Blake" Expedition, for which the Museum is indebted to Professor Alphonse Milne-Edwards, the "Blake" publications and collections remain in the same state as last year. The report of Professor Milne-Edwards is accompanied by twelve beautifully executed plates. The full knowledge of how small a return we were able to make for these magnificent publications.

Last fall I was invited by Colonel Marshall McDonald, the U. S. Fish Commissioner, to take charge of a deep-sea dredging expedition off the coasts of Central America and of Mexico. With the consent of the President of the United States, the "Albatross," Lieut. Commander Z. L. Tanner, commanding, was ordered to Panama, where I joined her in February. Our cruise extended from Panama to Cocos Island, thence south toward Malpelo, and back to Panama. Our second cruise ran from Panama to Galera Point, thence to the Galapagos, and from there to Acapulco; and in May I left the expedition at Guayamas, after a short exploration of the Gulf of California. The letters written on the voyage to Colonel McDonald give a preliminary account of this trip; they have been published in the Museum Bulletin (Vol. XXI. No. 4), and a more extended account of the expedition is in preparation. The collections made have arrived safely at Washington and, with the consent of Colonel McDonald, arrangements have been made for the publication of the results in the Memoirs and Bulletins of the Museum. The following gentlemen have kindly agreed to work up the collections: Professor S. F. Clarke and Mr. Peabody, the Hydroids; Dr. W. H. Dall, the Mollusks; Mr. C. B. Davenport, the Bryozoa; Professor Faxon, the Crustacea; Dr. C. Hartlaub, the Comatulae; Professor W. E. Hoyle, the Cephalopods; Mr. S. Garman, the Fishes; Dr. Goes, the Foraminifera; Dr. R. von Lendenfeld, the Phosphorescent Organs of Fishes; Professor Ludwig, the Holothurians; Professor Lütken, the Ophiurans; Dr. John Murray, the specimens of the bottom; Professor Mark, the Actinians; Mr. W. Percy Sladen, the Starfishes; Professor Studer, the Gorgonians; Dr. W. M. Woodworth, the Planarians; and Dr. H. V. Wilson, the Sponges. I shall myself undertake the general account of the Pelagic Fauna, the Acalephs, and the Sea Urchins. The groups forming the remainder of the collection will probably be distributed during the coming winter.

Twice before I had been on the point of making an exploration of the deep waters of the Pacific off Panama. Once my plans were disarranged by the breaking out of war between Chili and Peru, and three years ago, when the "Albatross" was on her way from New York to San Francisco, I was unable to meet her at Panama, although she was detained there for a time by the Fish Commissioner in hopes I might be able to join the ship before she left for the Galapagos. I find it difficult to express my obligations to Colonel McDonald for having given me the opportunity of accompanying the "Albatross" on her second cruise, and of carrying on the explorations of the past

Of the Bulletin. — Vol. XX. [Complete.]

No. 2. On the Rate of Growth of Corals. By A. Agassiz. pp. 4. 4 plates. August, 1890.

No. 3. Preliminary Account of the Fossil Mammals from the White River and Loup Fork Formations. Part II. Carnivora and Artiodactyla, by W. B. Scott. Perissodactyla, by H. F. Osborn. pp. 36. 3 plates. November, 1890.

No. 4. Contributions from the Zoölogical Laboratory. — XIX. Cristatella: the Origin and Development of the Individual in the Colony. By C. B. Davenport. pp. 52. 11 plates. November, 1890.

No. 5. Contributions from the Zoölogical Laboratory. — XX. The Eyes in Blind Crayfishes. By G. H. Parker. pp. 12. 1 plate. November, 1890.

No. 6. Notice of Calamocrinus Diomedae, a New Stalked Crinoid from the Galapagos, dredged by the U. S. Fish Commission Steamer "Albatross." By A. Agassiz. pp. 4. December, 1890.

No. 7. Contributions from the Zoölogical Laboratory. — XXI. The Origin and Development of the Central Nervous System in Limax maximus. By Annie P. Henchman. pp. 40. 10 plates. December, 1890.

No. 8. Contributions from the Zoölogical Laboratory. — XXII. The Parietal Eye in some Lizards from the Western United States. By W. E. Ritter. pp. 20. 4 plates. January, 1891.

Vol. XXI. [Complete.]

No. 1. Contributions from the Zoölogical Laboratory. — XXIV. Contributions to the Morphology of the Turbellaria. I. On the Structure of Phagocata gracilis, Leidy. By W. M. Woodworth. pp. 44. 4 plates. April, 1891.

No. 2. Contributions from the Zoölogical Laboratory. — XXV. The Compound Eyes in Crustaceans. By G. H. Parker. pp. 98. 10 plates. May, 1891.

No. 3. Contributions from the Zoölogical Laboratory. — XXVI. On some Points in the Morphology and Histology of Sipunculus nudus, L. By H. B. Ward. pp. 42. 3 plates. May, 1891.

No. 4. Three Letters from Alexander Agassiz to the Hon. Marshall McDonald, on the Dredging Operations off the West Coast of Central America to the Galapagos, to the West Coast of Mexico, and in the Gulf of California, carried on by the U. S. Fish Commission Steamer "Albatross." pp. 16. June, 1891.

No. 5. Contributions from the Zoölogical Laboratory. — XXVII. The Development of the Pronephros and Segmental Duct in Amphibia. By H. H. Field. pp. 140. 8 plates. June [August], 1891.

ALEXANDER AGASSIZ.

CAMBRIDGE, October 1, 1891.

Another small collection was brought from the ancient pile-structures of Lake Neuchatel in 1859 by another revered teacher, Louis Agassiz, whose assistant I was at that time. Well do I remember that little collection arranged in a corner case of the Museum of Comparative Zoölogy, and intended to illustrate the early conditions of man as part of the great collection planned by Agassiz for the comparative study of animal life. Had not Mr. Peabody made his gift for a special Museum of Archaeology and Ethnology, there can be little doubt that in the development of the Museum of Comparative Zoölogy that part relating to man would have had a vigorous growth from the seed planted by Agassiz when he brought these specimens from Neuchatel to be a part of his museum. Soon after the foundation of the Peabody Museum, Agassiz, with the true scientific spirit, gave to its cabinets all appropriate material from his collections; and since that time this Museum has received from the other such objects as are more in place in our cases than in its own. Now the two museums are fast approaching each other both intellectually and materially; for while the study of general zoölogy is more and more leading to the study of anthropology, the separate buildings will before long be united, when the collections illustrative of zoölogy, geology, mineralogy, botany, and anthropology will form a great University Museum.

To further review the past of the Peabody Museum would be to review the whole subject of American archaeology and ethnology for a quarter of a century, so closely identified is this Museum with many phases of its development. It has, moreover, taken its full share in the work of introducing scientific methods of arrangement into the heterogeneous collections of antiquities and of curios from uncivilized peoples. These scientific methods of research and arrangement are now producing results of importance, and many of these results are shown in our halls. Here the specimens are so arranged that a comparative study can be made of the beginning and development of primitive art among peoples in various stages of culture; while the osteological collection furnishes material for the study of the physical characteristics of each people and the racial connection of one to another.

Seventeen years ago when I was first called as the successor of my honored and lamented predecessor, Jeffries Wyman, to the charge of the Museum, its collections had during the eight years then passed outgrown the few cases in the Anatomical Laboratory, and were arranged in the upper gallery of Boylston Hall. At that time there were several important collections in the Museum, and with these for study and inspiration the incentive was great to develop it on a may be applied. It would in no way conflict with my wishes if those who have the disposition of the income of this fund should in their discretion decide to allow the income to accumulate for one or more years in order more fully to carry out the purpose of the trust. I can easily conceive that this may be desirable either for the equipment of an expedition for exploration, the purchase of collections, or for some other purposes within the scope of the trust. But I request that, whether the income be expended as it accrues or be allowed thus to accumulate for future use, a vote of the Trustees setting forth the disposition of it be entered upon their records as often as once yearly."

The liberal provision of this memorial fund will enable us to take advantage of many opportunities for increasing the collections, as with this money ready at hand it will be possible from time to time to do a little digging or to purchase a small collection of special importance. Our gratitude is due Mr. Roger Wolcott for the conditions of the gift as well as for the gift itself.

To Mrs. Esther Herrman of New York we are indebted for a gift of $500, and to Mr. James H. Jones of New York for $100. These sums I have used in a little special work in Tennessee and in the examination of a small burial-place of the Indians on Cape Cod. Mrs. Zelia Nuttall has kindly remembered our needs while abroad by contributing $100, which has been applied to printing expenses. Major William S. Beebe of Connecticut has given $250 toward the purchase of the collection of copper implements from Mexico, Mrs. Baylies has continued her annual contribution of $25, and the New England Telephone and Telegraph Company have contributed $35 to the Museum.

The lack of greater means for special research during the year has been severely felt, as we have lost opportunities for the exploration of several very important places which I had hoped would be thoroughly examined under our direction. The demand for "relics" is now so great, owing to the many collectors in the field and the high prices which they pay for stone implements, ornaments, pipes, and pottery, that a place where there is a liklihood of obtaining such relics of the past is soon dug over by parties who furnish the market with such specimens. I am sorry to add that a scientific spirit seldom actuates such work. In order that we may take advantage of good opportunities as they occur and carry on the work in a proper manner, it is greatly desired that two or three thousand dollars be added to our annual income. It must not be forgotten that our regular income for all purposes of the Museum is only a little over two thousand dollars and that with this sum we are obliged to care for the large Museum building, provide heat, light, and water, pay our express and postage and all incidentals of Museum administration. It can be readily seen, therefore, that for the increase of collections and their field under my direction. In the same way Mr. Cook, a private student who has by my advice entered the Scientific School as a special student, was sent to the Serpent Mound and to Fort Hill in Ohio. At the latter place he assisted in exploration and received practical instruction in surveying by aiding in the survey of Fort Hill, preparatory for a model of that ancient fortification. Mr. Saville, a student-assistant holding the Visiting-Committee Fellowship, passed a short time in the exploration of an Indian burial-place near North Truro on Cape Cod, and then went to Fort Hill to carry on excavations and to take a number of photographs for the Museum. On his return from Ohio he gave his time to the preparation of the outfit for the Honduras Expedition. This expedition he has accompanied as assistant in special charge of the archaeological work, for which he is fitted by several seasons' work in Ohio under my direction, and by his work in Yucatan last winter under the personal supervision of Mr. Thompson. Mr. Owens, a graduate student in the Museum, after a winter's work in the Laboratory passed the summer at the Moki pueblo in Arizona, as an assistant with Dr. Fewkes of the Hemenway Expedition. He returned to the Museum at the opening of the College term, is this year the holder of the Hemenway Fellowship, and has accompanied the Honduras Expedition as executive officer and archaeological assistant. Mr. Gerrodette, the new and third graduate student is engaged in laboratory work, and is assisting me in the care of the many specimens arriving at Cambridge for the Exposition. Miss Fletcher, the holder of the Thaw Fellowship, has been since last April living with the Nez Percé Indians in Idaho, where she has been engaged as a government officer in allotting lands in severalty to the Indians of that tribe. While thus occupied she has had many opportunities to observe the customs of the Indians, to study their history, their legends and their mythology, and to collect many objects for the Museum. In this connection it is proper to note that a series of papers by Miss Fletcher is soon to be published in the Century Magazine. In these articles she will make known much that she has learned of the Indian character and customs during the many years she has passed among the Indian tribes of the West. Mrs. Nuttall is still in Europe where she is actively engaged in pursuing her researches in relation to ancient Mexican civilization, and has recently collected some important material for a third number of her series on the customs of the ancient Mexicans.

It will be seen by this brief sketch that great activity has prevailed during the past year in many directions; and I may also allude to several researches under my direction which, while specially connected with the Columbian Exposition, are important in advancing American and with the privilege of bringing to the Museum one half of the collection obtained by our explorations of the ancient cities and burial-places within the borders of the country. This important decree is issued in the spirit of scientific research and it can but result in great benefit to Honduras by arousing an enlightened interest in her antiquities. Many material benefits to the country will also follow from our annual expeditions. On our part we expect to discover much of importance relating to that strange ruined city known as Copan, with its immense buildings of stone, its many carved monoliths with human figures in high relief, and strange hieroglyphs which must yield their meaning to the students who are now devoting themselves to the task of their interpretation. It will be for us to collect and preserve all such material, so that by means of specimens, photographs, and casts we may be able to furnish the student with the necessary means for this study. We also hope to learn many details relating to the position and structure of the buildings and their connection with the monoliths and accompanying blocks of stone, probably the gods and altars of the people. Many a deep problem of the past has been solved by the pick and spade, guided by minds trained in scientific research, and we have every reason to hope that after careful and long-continued excavation and study among these ruins and the adjacent territory some ray of light may break in upon the history of this unknown city and its mysterious builders. By the liberality of several friends the money deemed necessary for this year's work, which must be largely preparatory for that of the following years, has already been given. The expedition has been organized and thoroughly equipped for six months' work in Copan and is already on its way. Much to my regret my other duties will not permit me to personally lead the expedition this year. The full organization of the expedition for the present season's work is as follows: F. W. Putnam, director; C. P. Bowditch and F. C. Lowell, special committee of the Museum; M. H. Saville, scientific assistant; J. G. Owens, executive officer; H. W. Price, resident agent; Gorgonio Lopez, foreman, with his son and brother as special workmen. In organizing and equipping this expedition we have received very important assistance and advice from Mr. A. P. Maudslay of England, who has made a study of Copan, where he has spent more time than any other investigator and has taken moulds of many of the monoliths and altars for his comparative study of the hieroglyphs of Central America. Through his kind coöperation we have secured the services of Mr. Price who was with him in similar work at Palenque, and of the three members of the Lopez family of Guatemala who were his assistants in Copan.

tains a number of leaf-shaped implements showing considerable weathering, and among them is the largest chipped implement I have ever seen from New England. The other is a fine series of stone implements and ornaments principally from the vicinity of Fall River. These specimens were collected during the past few years by Mr. Allan Cook who has entered the Museum as a private student, and as a pledge of his devotion has presented his entire private collection to the Museum.

By the kindness of Surgeon Billings, Curator of the Army Medical Museum, we have been furnished with a valuable addition to our anthropological laboratory in the form of an apparatus for holding skulls in such a manner that their correct outlines can be drawn on a plate of varnished glass by means of the periglyph, and Dr. J. C. McConnell has presented the Museum with a periglyph that he made expressly to accompany the apparatus.

Publications. — During the year the twenty-third and twenty-fourth annual reports were printed and issued under one cover. Numbers II. and III. of the Special Papers have also been printed. Number II. is an account of the Karankawa Indians by Dr. Albert S. Gatschet, with a vocabulary largely obtained from the late Mrs. Oliver of Lynn. The incidents leading to this fortunate preservation of a now extinct language of a tribe of Texan Indians are narrated in the paper, which also contains an historical account of the tribe. Number III. of the Papers is by Mrs. Zelia Nuttall and is an instructive and exhaustive discussion of a singular weapon of the ancient Mexicans, the Atlatl, which, originally designed as a spear-thrower, became in time a ceremonial object of great importance. Mrs. Nuttall in her clear and comprehensive way has followed the various forms of the implement as shown in the Mexican picture writing, and in the ancient Mexican sculptures, and has incidentally treated of other interesting matters relating to the ancient Mexicans. This paper is illustrated by three plates from drawings made under Mrs. Nuttall's direction in Dresden and generously furnished to the Museum.

The Visiting Committee appointed by the Overseers has continued to take an active interest in the work of the Museum and has held several meetings during the year for the consideration of affairs pertaining to the Museum and the means for its advancement. It will be seen by this and the preceding report that their efforts have been helpful to the Museum in many ways.

While most of the casts ordered are Assyrian, there are also reproductions of many Hebrew, Phoenician, Arabic, Hittite, and Persian monuments. These occupy more than half of our space for exhibition.

We have received by purchase a lot of Babylonian-Assyrian engraved seals and several collections of cuneiform tablets. With these have been incorporated six tablets given to the University by Miss E. F. Mason, and two collections belonging to the Divinity School, one of these being the gift of Mr. Stephen Salisbury.

From Egypt we have twenty-five stones with mortuary inscriptions in the Cufic character, several of which belong to the eighth and ninth centuries of our era.

There is likewise an interesting small collection of manuscripts, Hebrew, Syriac, and Arabic, and we have just received a lot of forty-six Arabic manuscripts, several of which are of considerable age and value. There has not been time to prepare these for exhibition.

A beginning has been made in collecting Semitic coins. Among these are fine specimens of the Hebrew shekel and half shekel.

Of Photographs we have many hundreds, illustrating Semitic scenery, architecture, and manners and customs. About two hundred are on exhibition, but many of these will now have to be removed to make room for casts.

The collection has just been increased by the arrival of a lot of Babylonian, Moabite, Arabic, and Persian casts, which are among the finest in our possession. Some of these will require special cases because they are figures in the round and should, therefore, be seen on all sides.

The Museum has been enriched by friends at home and abroad, who have given many small but interesting objects. The kindness of the authorities of the museums in London, Paris, and Berlin deserves special mention.

The work of arranging the objects and preparing labels occupied much time in the winter and spring of 1890–91. Some of the shorter of these labels are to be replaced by longer ones. The new manuscripts are also to be studied and described. It is our purpose to issue a catalogue of the collections.

On May 13, 1891, the Museum was formally opened. Addresses were made on the occasion by the President of the University, by Mr. Schiff, and by the professors of the Semitic Department. The collection is now open daily, Sundays excepted, from 9 A.M. to 5 P.M.

The Museum is already much used in illustrating the Semitic instruction offered in the University. For research work and acquaintance with the sources casts have scarcely less value than originals. The Museum attracts also many visitors, both students and others.

About one half of Mr. Schiff's gift remains unexpended, but orders are now out which will require most of the remainder.

Of the $3000 placed at our disposal for providing the gallery with cases only about $100 remain. There is pressing need of about $1000 more to make the special cases for the objects in the round. Some of these objects will be placed on exhibition in the wall cases, but it is much to be hoped that some friend will provide the means to exhibit them to better advantage.

The gallery is now nearly full and will soon be crowded. We are, therefore, confronted with the problem of more space. Until this problem shall be solved we shall be able henceforth to purchase only manuscripts and small objects. The usefulness of the Museum for illustration and research would be further increased if the Semitic lecture-rooms and the Semitic library could be combined with it under one roof.

D. G. LYON, *Curator.*

DECEMBER 19, 1891.

APPENDIX.

RESIGNATIONS.

Henry Pickering Walcott, Member of the Committee on the Regulation of Athletic Sports, November 24, 1890.

Clement Lawrence Smith, Dean of Harvard College and Member of the College Administrative Board, February 9, 1891, to take effect June 24, 1891.

Francis Minot, Hersey Professor of the Theory and Practice of Medicine, April 27, 1891, to take effect September 1, 1891.

Adolphe Cohn, Assistant Professor of French, May 12, 1891, to take effect September 1, 1891.

William Burdelle Bentley,
George Philip Wardner,
Proctors, March 23, 1891.

Henry Willard Williams, Professor of Ophthalmology, May 25, 1891, to take effect September 1, 1891.

George Pierce Baker, Jr., Instructor in English, June 1, 1891.

Winfield Scott Chaplin, Chairman of the Parietal Committee, June 23, 1891.

Harold Whiting, Instructor in Physics, June 23, 1891.

Charles Prosper Fagnani, Lecturer on the New Testament, June 23, 1891.

Winfield Scott Chaplin, Professor of Engineering and Dean of the Lawrence Scientific School, September 29, 1891, to take effect October 1, 1891.

Frank Walter Nicolson, Instructor in Latin, September 29, 1891.

Joseph Torrey, Jr., Assistant in Chemistry, September 29, 1891.

APPOINTMENTS.

[UNLIMITED, OR FOR TERMS LONGER THAN ONE YEAR.]

Josiah Royce, to be Assistant Professor of Philosophy for five years from September 1, 1890, October 22, 1890.

Henry Pickering Walcott, to be Fellow of the Corporation, October 22, 1890.

Robert Swain Morison, to be Librarian of the Divinity School, October 22, 1890.

Adolphe Cohn, to be Assistant Professor of French for five years from September 1, 1890, November 24, 1890.

Henry Warren Torrey,
Francis James Child,
Charles Eliot Norton,
Charles Franklin Dunbar,
Crawford Howell Toy,
George Lincoln Goodale,
to be Members of the Council of the Library for three years from January 1, 1891, December 8, 1890.

William Burdelle Bentley,
Wilfred Bolster,
Frederick Wesley Dewart,
Carl Adolph Ewald,
Thomas Walton Galloway,
Henry Hudson,
Francis Cleveland Huntington,
Frederick Boyden Jacobs,
Charles Louis Mix,
Franklin Dixon Peale,
Edgar Judson Rich,
Franklin Chester Southworth,
Charles Martin Thayer,
David Clarence Torrey,
George Philip Wardner,
to be Proctors, October 1, 1890.

Edward Campbell Beckett, to be Instructor in Operative Veterinary Surgery, October 8, 1890.

Arthur Astor Carey, to be Instructor in English, October 8, 1890.

Edward Stanley Abbott, to be Assistant in Histology, October 8, 1890.

Henry Jackson, to be Assistant in Bacteriology, October 8, 1890.

Frank Stanley Stebbins, to be Proctor, October 8, 1890.

John Wesley Churchill, to be Instructor in Elocution in the Divinity School, October 22, 1890.

John Baker Swift, to be Clinical Instructor in Diseases of Women, October 22, 1890.

Frederick Harold Bailey, to be Assistant in Mathematics, October 22, 1890.

Frank Burr Mallory, to be Assistant in Histology, October 22, 1890.

Joseph Torrey, Jr., to be Assistant in Chemistry, October 22, 1890.

Robert DeCourcy Ward, to be Assistant in Physical Geography and Meteorology, October 22, 1890.

Byron Satterlee Hurlbut, to be Assistant in English, November 10, 1890.

William Forrest Pillsbury, to be Instructor in History, November 10, 1890.

William Codman Sturgis, to be Assistant in Cryptogamic Botany, November 10, 1890.

William Homer Warren, to be Assistant in Chemistry, November 10, 1890.

Charles Benedict Davenport, to be Proctor, November 10, 1890.

Maurice Howe Richardson, to be a Member of the Committee on the Regulation of Athletic Sports, November 24, 1890.

Benjamin Ives Gilman, to be Lecturer on the Psychology of Music, November 24, 1890.

Stanislas Danion, to be Instructor in French, November 24, 1890.

Nathaniel Thayer Kidder, to be Instructor in Botany, November 24, 1890.

Albert Henry Tuttle, to be Instructor in Entomology, November 24, 1890.

William Gray,
Henry Lee,
William Sturgis Bigelow,
to be Trustees of the Museum of Fine Arts, December 22, 1890.

Henry Cary Badger, to be Curator of Maps, January 26, 1891.

Jonathan Brace Chittenden,
Charles Rochester Eastman,
to be Proctors, March 23, 1891.

John George Jack, to be Arboretum Lecturer, April 13, 1891.

Henry Barnard Kummel, to be Assistant in Geology, June 8, 1891.

Herbert Nichols, to be Assistant in Psychology, June 8, 1891.

Winfield Scott Nickerson, to be Assistant in Zoölogy, June 8, 1891.

George James Peirce, to be Assistant in Botany, June 8, 1891.

William Lyon Phelps, to be Assistant in English, June 8, 1891.

Herbert Maule Richards, to be Assistant in Botany, June 8, 1891.

David Ellsworth Spencer, to be Assistant in History, June 8, 1891.

Joseph Torrey, Jr., to be Assistant in Chemistry, June 8, 1891.

Robert DeCourcy Ward, to be Assistant in Physical Geography and Meteorology, June 8, 1891.

Lewis Gardner Westgate, to be Assistant in Geology, June 8, 1891.

Jay Backus Woodworth, to be Assistant in Geology, June 8, 1891.

LeBaron Russell Briggs,
Charles Eliot Norton,
Charles Joyce White,
George Alonzo Bartlett,
William Morris Davis,
William Elwood Byerly,
Ephraim Emerton.
Charles Rockwell Lanman,
Silas Marcus Macvane,
Freeman Snow,
John Henry Wright,
Benjamin Osgood Peirce,
Oliver Whipple Huntington,
Morris Hicky Morgan,
George Lyman Kittredge,
Arthur Richmond Marsh.
to be Members of the Administrative Board of Harvard College, June 23, 1891.

Winfield Scott Chaplin,
Nathaniel Southgate Shaler,
Henry Barker Hill,
Edwin Herbert Hall,
Hans Carl Günther von Jagemann,
Paul Henry Hanus,
John Eliot Wolff,
to be Members of the Administrative Board of the Lawrence Scientific School, June 23, 1891.

James Mills Peirce,
William Watson Goodwin,
George Lincoln Goodale,
John Trowbridge,
Charles Loring Jackson,
Edward Laurens Mark,
Edward Stevens Sheldon,
David Gordon Lyon,
Edward Channing,
Frank William Taussig,
to be Members of the Administrative Board of the Graduate School, June 23, 1891.

Samuel Silas Curry, to be Instructor in Elocution, June 23, 1891.

Herman Wadsworth Haley, to be Instructor in Latin, September 29, 1891.

Joseph Torrey, Jr., to be Instructor in Chemistry, September 29, 1891.

Edgar Buckingham,
George Augustus Chamberlain,
Charles Averell Rich,
to be Assistants in Physics, September 29, 1891.

John Homans, to be Clinical Instructor in the Diagnosis and Treatment of Ovarian Tumors, June 23, 1891.

Philip Coombs Knapp, to be Clinical Instructor in Diseases of the Nervous System, June 23, 1891.

Abner Post, to be Clinical Instructor in Syphilis, June 23, 1891.

John Baker Swift, to be Clinical Instructor in Diseases of Women, June 23, 1891.

George Lincoln Walton, to be Clinical Instructor in Diseases of the Nervous System, June 23, 1891.

Francis Sedgwick Watson, to be Clinical Instructor in Genito-urinary Surgery, June 23, 1891.

Francis Augustine Harris, to be Demonstrator of Medico-legal Examinations, June 23, 1891.

William Merritt Conant, to be Assistant Demonstrator of Anatomy, June 23, 1891.

Edward Stanley Abbott, to be Assistant in Histology, June 23, 1891.

William Sohier Bryant, to be Assistant in Anatomy, June 23, 1891.

John Wheelock Elliot, to be Assistant in Clinical Surgery, June 23, 1891.

William Carroll Emerson, to be Assistant in Chemistry, June 23, 1891.

Frank Bishop Harrington, to be Assistant in Clinical Surgery, June 23, 1891.

Henry Jackson, to be Assistant in Bacteriology, June 23, 1891.

Frank Burr Mallory, to be Assistant in Histology, June 23, 1891.

George Howard Monks, to be Assistant in Clinical and Operative Surgery, June 23, 1891.

John Cummings Munro, to be Assistant in Anatomy, June 23, 1891.

Edward Reynolds, to be Assistant in Obstetrics, June 23, 1891.

Charles Locke Scudder, to be Assistant in Clinical Surgery, June 23, 1891.

Thomas Foster Sherman, to be Assistant in Diseases of Children, June 23, 1891.

Charles Pratt Strong, to be Assistant in Gynaecology, June 13, 1891.

Charles Wendell Townsend, to be Assistant in Obstetrics, June 23, 1891.

Francis Sedgwick Watson, to be Assistant in Clinical Surgery, June 23, 1891.

Charles Francis Withington, to be Assistant in Clinical Medicine, June 23, 1891.

Charles Pomeroy Worcester, to be Assistant in Chemistry and Secretary of the Medical Faculty, June 23, 1891.

Frank Burr Mallory,
Henry Francis Sears,
to be Assistants in Pathological Anatomy, September 29, 1891.

Frederick Eugene Banfield,
Waldo Elias Boardman,
Forest Greenwood Eddy,
Henry Webster Gillett,
Virgil Clarence Pond,
Charles Hutchins Taft,
Henry Lauriston Upham,
to be Instructors in Operative Dentistry, June 23, 1891.

ANNOUNCEMENT OF COURSES FOR TEACHERS ON METHODS OF INSTRUCTION.

The Faculty of Arts and Sciences offers, during the academic year 1891–92, the following special courses on "Methods of Instruction," adapted to the purposes of teachers, and of persons intending to become teachers. These courses are open to men who are graduates of colleges or scientific schools, or who are otherwise known to be of suitable age and attainments, under the same conditions as those which govern admission to the Graduate School. Students pursuing any of these courses will be under the supervision of a special committee of the Faculty of Arts and Sciences, and will be responsible to that committee for the faithful use of the opportunities offered. Upon completing the instruction offered, or any definite portion thereof such as the Faculty shall in each case approve as sufficient, and upon passing satisfactory examinations, students will receive certificates of the work actually done.

The Instruction offered relates to the History of Teaching, the Theory and Art of Teaching, and to the Methods of Elementary Teaching in the following topics: Greek, Latin, English, German, French, History, Mathematics, Physics, Chemistry, Zoölogy, Botany, Geology, and Geography.

In each of these topics a course of lectures, by one or more instructors belonging to the department in question, will form the core of the instruction. In addition, students will be required to perform tasks such as are indicated in the following special announcements of the various departments. This additional work will include practical exercises, conferences, and attendance upon courses of instruction already included in the general list of those offered by the Faculty. A course of twelve lectures will also be given on "Topics in Psychology of Interest to Teachers," by Professor WILLIAM JAMES of the Department of Philosophy.

The special announcements of courses in the individual topics are: —

I. THE HISTORY, THEORY, AND ART OF TEACHING.

1. History of Teaching and of Educational Theories. LECTURES AND DISCUSSIONS twice a week during the year. Two essays.

2. Theory of Teaching. — The psychological basis of methods; critical examination of Educational Doctrines. LECTURES AND DISCUSSIONS once a week during the year. Two essays.

3. The Art of Teaching. — General school-room practice; management; supervision; government and organization of public schools and of academies. LECTURES AND DISCUSSIONS twice a week during the year.

ADDITIONAL EXERCISES: Students will be expected to observe the teaching in some designated school or schools in the vicinity of the University and to present reports of what they see at weekly meetings during the second half-year.

These courses will be conducted by Assistant Professor PAUL H. HANUS.

V. GERMAN.

1. **Lectures** (ten in number). **Topics**: Methods of teaching the German language. The selection of text-books. Reference-books. Home reading. Other topics.

2. **Additional Exercises**: Attendance at five recitations in German *A*, *B*, *C*, 1*a*, 1*b*, 9, 2, 3, 4 each, making forty-five recitations in all (see the General Announcement referred to above, under the English Department, for accounts of these courses). A written analysis and annotation of ten to fifteen pages of a text suitable for beginners. A written report upon some pedagogical treatise bearing upon instruction in German, such treatise to be assigned by the department. Conducting of a recitation in an elementary class in the presence of the department.

The course will be under the general direction of Assistant Professor Bartlett.

VI. FRENCH.

1. **Lectures** (twelve in number). **Topics**: Methods of teaching French. — What is practical and possible in certain cases. — Text-books. — Oral teaching. — Grammar. — Pronunciation. — How to read a French book. — The use and misuse of translation from French into English and from English into French. — The place of Historical Grammar in elementary teaching. — How to lead the pupil to read and think in French without the interposition of English. — Reference books.

2. **Practical Exercises**: Students will be required to attend fifteen recitations in all, in at least two of the elementary courses, and these will be followed by conferences with the instructor of the course attended. The dates of attendance will be announced later. Students will also be permitted to attend any of the courses in the French Department.

The course will be under the general direction of Professor Bôcher.

VII. HISTORY.

1. **Lectures** (fifteen in number). **Topics**: Methods of teaching, choice of text-books, selection of topics, the proper place of chronology, geography, biography, etc. in historical study.

2. **Practical Exercises**: Work in the Library. — Use of books, training in topical work, etc. to illustrate the methods best adapted to instruction in High Schools.

3. **Additional Exercises**: Attendance at specified College exercises, and the opportunity of visiting other regular exercises in History in the College and the Graduate School.

The course will be under the general direction of Professor Emerton and Assistant Professor Hart. — The other instructors of the History Department will give their coöperation as desired.

XI. BOTANY.

1. **Lectures** (ten in number). **Topics**: Methods of teaching Vegetable Morphology, Physiology, and Economic Botany.

2. **Additional Exercises**: Students will be required to attend certain specified exercises in Elementary and Advanced Botany, and to assist in laboratory supervision.

The course will be under the general direction of Professor **Goodale**.

XII. ZOÖLOGY.

1. **Lectures** (three in number). **Topics**: Methods of teaching Zoölogy. Modern methods of work in Zoölogy. The equipment and management of a school laboratory.

2. **Additional Exercises**: Students who wish to receive a certificate will be required to attend Zoölogy 1 and 2 (see the General Announcement of the Courses of Instruction provided by the Faculty for 1891–92), and to pass the examinations and do the regular work in the same.

The course will be under the general direction of Professor **Mark**.

XIII. GEOLOGY.

1. **Lectures**: Attendance on the now existing course known as Geology *4a* is required; also on certain designated lectures in Geology 4.

2. **Additional Exercises**: One conference each month, especially devoted to matters connected with the Instruction for Teachers.

3. Course 8 and Course *B* of the Summer School are recommended.

The course will be under the general direction of Professor **Shaler**.

XIV. GEOGRAPHY.

1. **Lectures** (five in number): On methods in Descriptive and Physical Geography.

2. Students will be expected to perform **practical exercises** on the line of these lectures, preparing abstracts from reading, constructing diagrams and models, etc.

3. **Additional Exercises**: For those who have had but brief study of Physical Geology the elementary courses Geology 1 and 2 will be required; and all who propose to teach in this subject will be advised to take Geology 20 or 21.

The course will be under the general direction of Professor **Davis**.

Christian Brothers' College									1													
Christian University				1																		
University of Cincinnati																			1	1			2
Colby University	1						1		1	1			1		1		1		1	1	1		10
University of Colorado													1										
Columbia College				1									1								1	2	5
University of Copenhagen	1																						
Cornell College							1												1				2
Cornell University					1	1							1	1		1					2		9
Dalhousie College							1					1								1			3
Dartmouth College	4			3		1		1	3		1	2		1			2		1	1	2		23
Delaware College								1	1											1			3
De Pauw University																	1						
Dickinson College																	1						
Drake University																1							
Earlham College				1																			
University of Edinburgh													1										
Emory College			2		1	1				1													6
Emory and Henry College																							
Eureka College																		1					
Fisk University																		1					
University of France																							
Franklin and Marshall																						1	1
Georgetown College (D. C.)												1			1					2			6
Georgetown Coll. (Ky.)								1															2
University of Georgia										1													
Griswold College	2					1																	3
Hamilton College																1							

Marietta University	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Maryland Agricultural College	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1
Massachusetts Agricultural College	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	1	.	.	.	.	3
Massachusetts Institute of Technology	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	2
Mercer University	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1
Miami University	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
University of Michigan	.	.	1	1	.	.	2	1	.	.	.	1	.	3	1	1	1	.	1	.	2	.	15
Middlebury College	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
University of Minnesota	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2	3
Agricultural and Mechan. College of Mississippi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1
University of Mississippi	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Monmouth College	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Mt. Alison College	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Mt. St. Mary's College	.	.	.	1	.	1	1	.	.	.	.	.	.	.	.	1	2	.	.	1	1	.	8
Mt. Union College	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
National Normal University	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	2
University of Nebraska	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1
University of New Brunswick	2	.	1	.	.	2	.	.	.	.	2	.	.	.	.	.	.	2	.	3	1	2	15
College of City of New York	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1
Northwestern Christian University	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Notre Dame University (Ind.)	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	1	.	1	1	5
Oberlin College	.	.	.	.	.	.	.	1	2	1	.	.	1	.	1	3	2	2	.	.	.	2	15
Oglethorpe University	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Ohio Wesleyan University	1	1	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Olivet College	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1
University of the Pacific	.	1	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	2
Pacific Methodist College	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	1	.	.	3
Pennsylvania Central High School	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1

University of Virginia	1	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	4
Victoria University	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Wabash College	.	.	1	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2
Washington University (Mo.)	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	2
Washington and Jefferson College	2	.	.	.	.	.	2	.	1	.	.	.	.	.	1	.	.	.	.	.	.	1	7
Wesleyan University (Ct.)	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	1	1	.	.	.	7
Wesleyan University (Ia.)	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2
Wesleyan Univ. (N. S.)	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Western Reserve College	.	.	.	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Western University of Pennsylvania	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	2
Westminster College	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	2
Williams College	3	2	.	4	.	.	1	4	.	.	.	2	.	.	.	1	1	.	.	.	5	3	26
Wisconsin University	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2
Wittenberg College	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Wofford College	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	2
Worcester Free Institute	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Yale University	4	2	2	4	2	3	.	2	3	.	3	6	.	1	2	5	5	3	3	6	4	18	78

PRICE-LIST OF THE

Hours for meals: Breakfast, 7.30–8.50; I
Sunday: Breakfast, 8–9.30; Lunch.

Tea	3 cts.	V
Coffee	3 "	C
Cocoa	3 "	C
		E
Glass of milk	2 "	G
Bowl of milk	4 "	C
Cheese	1 "	
Butter	2 "	I
		F
PIES.		
Mince	4 "	
Apple	4 "	C
Fruit	4 "	C

BREAKFAST A

Oatmeal and milk	4 cts.	I
Wheat and milk	4 "	F
Hominy and milk	4 "	
Rice and milk	4 "	
Cold meats	10 "	F
Fish balls	5 "	S
Hot potatoes	2 "	

DINNE

Soup	4 cts.	S
Fish	10 "	I
Roast beef	10 "	V
Roast mutton	10 "	I

Other dishes will be added at th

ADDITIONAL DISHES ON DEC.

Oranges	2 cts.	C
Bananas	2 "	E
Apples	1 "	
		F
		F
Cranberry sauce	4 "	E
Apple jelly	4 "	I
Chocolate éclairs	4 "	S

INDEX.

PAGE
dministrative Boards 10, 41, 79–82, 205
ppointments 6, 17, 201–208
RNOLD ARBORETUM, report on 26, 27, 163, 165
RTS AND SCIENCES, Faculty of 7–14
“ “ “ report of Dean of 41–69
“ “ “ increase of administrative work of 10, 41
“ “ “ organization of divisions and committees of 11, 12, 42–47
“ “ “ instruction offered by 11, 47–69
“ “ “ gain in lecture hours 12, 13
OTANIC GARDEN, report on 25, 26, 156–163
otanical Museum 26, 158
USSEY INSTITUTION, report on 22, 132–133
HEMICAL LABORATORY, report on 27, 166–168
“ “ original work in 166–167
“ “ equipment 168
OLLEGE, report on 14–17, 70–84
“ statistics of admission to 14, 15, 16, 71–77
“ statistics of needy scholars of high rank 16, 17
“ number of students in 70
“ discipline in 78, 79
“ authority of Administrative Board 81–82
“ anticipation of studies 82–84
“ degrees with distinction and honors 46
“ proposed abridgment of course for degree of A.B. 7–9
“ graduation in three years 9, 84
ost of living 35–37
eaths 3, 4
egrees 87, 88, 208
ENTAL SCHOOL, report on 21, 22, 129–132
“ “ Association 131
IVINITY SCHOOL, report on 18, 98–104
“ “ gain in number of students 18, 98, 99
“ “ needs of 19
ormitory needed 36, 37
oxcroft Club 36, 220
ifts 18, 22, 25, 27, 28, 30, 31, 34, 84, 103, 104, 118, 133, 151, 154, 161, 162, 164, 168, 183, 190, 191, 196, 197, 200
RADUATE SCHOOL, report on 18, 86–98
“ “ number of students 86, 87
“ “ fellowships and scholarships in 18, 88–93
“ “ requirements for the higher degrees 18, 93–98
ERBARIUM, report on 25, 154–156
ncrease in number of students in the University 33, 42
“ of gross annual expenditures 34
EFFERSON PHYSICAL LABORATORY, report on 28, 169–172
“ “ “ original work 171–172
“ “ “ equipment 169, 170, 172

LAW SCHOOL, report on 19–21, 104–117, 214–219
" " statistics of the School 107–110, 214–219
" " changes in twenty years 106–111
" " growth and consequent difficulties 19, 20, 111–117
LAWRENCE SCIENTIFIC SCHOOL, report on 17, 18, 84, 85
" " " number of students 17, 84
" " " new courses and workshop 17, 85
LIBRARY, report on 23, 24, 138–154
" subject catalogue and index 23, 139, 140, 146, 147
" ordering department 148–151
" accessions 140–142
" department libraries 24, 141, 151
" use of 142, 145
" imperative needs of 24, 152–154
MEDICAL SCHOOL, report on 21, 117–128
" " new fellowships 21, 118
" " course increased to four years 21, 117
" " instruction in 21, 124–128
" " Association 118
" " special research 119–121
" " statistics of 121–123
MINERALOGICAL MUSEUM 27, 167
MUSEUM OF COMPARATIVE ZOÖLOGY, report on 29, 181–187
" " " deep-sea dredging expedition . . 185, 186
" " " instruction at 181
" " " accessions 184
" " " needs of and financial condition . 30, 186
OBSERVATORY, report on 28, 172, 181
" a fireproof building needed for 28, 172, 173
" expedition to Peru 29, 176–177
" employment of instruments 173, 174
" Henry Draper Memorial 174, 175
" Boyden Fund 29, 176, 177
" Bruce photographic telescope 178
PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY . . . 30, 31
" " report on 188–198
" " expedition to Honduras 31, 193, 194, 195
" " Hemenway Fellowship 190
" " Wolcott gift 30, 190–191
" " instruction and explorations 192–194
Preachers to the University 5, 6, 204
Reception of new students 13, 14
Regent 6, 7
Resignations 4, 5, 72, 73, 201
Semitic Museum, report on 31, 198–200
Special Students 14, 15, 72, 77–78
Summer courses 32, 33, 67–70, 118, 158, 159, 167, 170, 171
Teaching, instruction on 6, 11, 12, 209–213
University Museum 29, 30, 167
VETERINARY SCHOOL, report on 23, 133–138
" " financial condition and needs of 23, 137

TREASURER'S STATEMENT.

SIGILLVM ACADEMIAE HARVARDIANAE IN NOV ANG
CHRISTO ET ECCLESIAE
VE RI TAS

1891.

TREASURER'S STATEMENT.

To the Board of Overseers of Harvard College: —

The Treasurer of the College submits the Annual Statement of the financial affairs of the University, for the year ending July 31, 1891, in the usual form. Important changes in the accounts were made as of July 31, 1891, which are fully explained by entries on the records of meetings of the Corporation, as follows: —

At the meeting of October 26, 1891, it was

"*Voted*, that the sum of $23,341.97 being the net gain from sales of bonds at a profit, heretofore credited to the account of Railroad Bond Premiums, be transferred as of July 31, 1891, to a new account to be called 'Gains and Losses for General Investments,' which account shall be credited with all gains and charged with all losses hereafter arising from sales of property belonging to the general investments. As this account belongs pro rata to all the Funds sharing in general investments it is not to be allowed interest when its balance is on the credit side nor to be charged with interest when its balance is on the debit side."

"The Treasurer made the following statement in relation to the account called 'Unimproved Lands in Cambridge': —

"This account was opened during the year 1866–67, when the Corporation abandoned the old method of guaranteeing five per cent income to each Fund sharing in the general investments and treating all surplus income as available for general uses. In the year 1869–70 the Corporation adopted the present method of dividing pro rata the whole income from general investments and of providing for the general expenses of the University out of unrestricted Funds only, but the cost of unproductive land in Cambridge bought for University purposes was still charged to 'Unimproved Lands' up to September 1, 1872, when the sum of $106,887.49 stood to the debit of that account. The records do not show how the Corporation then expected to deal with this account, but the use of the words 'temporarily unimproved' and the fact that a subscription was started to pay for some of the land suggest that it was not the intention of the Corporation to provide lands for unproductive uses at the cost of the general investments. All lands bought since 1872 have been provided for at the cost of unrestricted Funds only, but in consideration of the benefits which all the generally invested Funds received from sharing in the Webb estate and other old unrestricted property, it was deemed by the Corporation in 1880 to be fair that the account of Unimproved Lands should be credited with net gains from sales of securities at a profit. Up to July 31, 1891, such credits have reduced the account from $106,887.49 to $4751.13. It was thereupon

"*Voted*, that the sum of $4751.13 standing to the debit of the account of Unimproved Lands in Cambridge be charged off as of July 31, 1891, to the account of Gains and Losses for General Investments."

At the meeting of November 9, 1891,

"The Treasurer made the following statement: —

"It appears from a careful examination of the College books of account that the balance of $353,585.06 to the debit of Houses and Lands in Cambridge on July 31, 1891, resulted from a long series of debits and credits relating to such property beginning in 1790 and continued without a break for more than a hundred years. It also appears that from the beginning up to the year 1866–67 no restricted Fund was considered to have any interest in such property, except as security for the payment of income at a fair rate fixed from time to time, which rate was five per cent from the year 1825–26 until 1865–66 inclusive, having been reduced from six per cent in 1826. Up to 1866–67, all the Cambridge real estate had always been managed by the Corporation for the general good of the University, either as income yielding property or for the other needs of the University. In 1866–67 the former fixed rate of five per cent being much below the current rate of income from good securities, the Corporation adopted the principle of allowing each Fund not specially invested a pro rata interest in the income from general investments. No change, however, was then made by the Corporation in its manner of dealing with the Houses and Lands in Cambridge for the general good of the University, except to open a separate account with some of the unimproved lands. From that time the Corporation has been embarrassed in dealing with Cambridge property, and during the past fifteen years it has refused to invest in such property any more money, except money in which the restricted Funds had no interest. While it is a fact that on the average during the past seventeen years the Cambridge property, including all unimproved land, has yielded income on its cost to the general investments at a fair rate, not much less than the average rate from the other general investments, and while it is now yielding more than such average rate, there is yet no doubt that it has always been and must be a wasting security, because the general needs of the University are steadily absorbing its land for unproductive uses, or at least for uses from which the restricted Funds cannot be allowed income. To the University as a whole it may indeed become highly productive property, if the friends of the College shall continue to build dormitories upon it and give them to the College; but it ought to be held only for the account of such University Funds as are wholly unrestricted, as to both principal and income, so that the Corporation may be free to deal with it for the best interests of the University. Under the circumstances as above stated, and in view also of the facts stated at the last meeting of the Corporation with reference to the account of Unimproved Lands, it seems fair that all the Cambridge real estate which was included in the accounts of Unimproved Lands and of Houses and Lands on July 31, 1891, should be transferred from the general investments to a special investment for unrestricted University Funds at the valuation of $353,585.06 at which it is now charged on the books. It was thereupon

"*Voted*, that all the real estate which on July 31, 1891, represented the investment account called Houses and Lands in Cambridge, together with all the real estate heretofore charged to the account called Unimproved Lands in Cambridge, be transferred as of July 31, 1891, from general investments, to a special investment, at a total valuation of $353,585.06, and that the account of such special investment be called "University Houses and Lands."

"*Voted*, that as of July 31, 1891, the following University Funds which are wholly unrestricted, namely, the George B. Dorr Fund, the Francis E. Parker Fund, the John C. Gray Fund, the Insurance and Guaranty Fund and so much of the Stock Account as may be needed, be withdrawn from the general investments, and be assigned to the special investment in University Houses and Lands. In case the account of University Houses and Lands shall be hereafter increased by additional investments of like nature, other unrestricted University Funds may be hereafter assigned to share the account with the above, pro rata to their respective contributions.

"*Voted*, that whenever the net income in any year from the University Houses and Lands shall exceed what would be needed to pay the same rate of income to its special Funds as shall be paid in such year to the Funds generally invested, such excess of income shall be credited to the account of University Houses and Lands as a repayment to capital from a wasting security.

"*Voted*, that, as of July 31, 1891, the account of University Houses and Lands be charged with the sum of $10,000 for the present value of the Joseph Lee land taken for College House, and that said sum be credited to the Joseph Lee Fund as an unrestricted University Fund sharing in the special investment of University Houses and Lands.

"*Voted*, that, as of July 31, 1891, the sum of $1000 be credited to the Stock Account and charged to University Houses and Lands for the Wiswall estate, the Appleton Orchard, except so much thereof as forms part of the Memorial Hall Delta, and all the lands in Cambridge now owned by the College which belonged to it before the year 1698. No buildings are transferred by this vote, and on these lands the only buildings belonging to University Houses and Lands are College House, Grays Hall, and Holyoke House, which were built at the cost of the Houses and Lands account. This transfer is made at a nominal consideration in view of the absorption by the University for unproductive uses of these lands and of other lands belonging to the account of University Houses and Lands."

"The Treasurer reported in relation to the dwelling house at the Observatory, and read a letter from Professor Pickering, — it was thereupon

"*Voted*, that at the request of Professor Pickering the building (without any land) occupied by him and known as the 'Observatory House' be transferred from the account of University Houses and Lands to the Observatory as of July 31, 1891, at its original valuation of $5000; and that in part payment therefor the land (and buildings) on the corner of Madison Street and Concord Avenue, bought by the Observatory in 1886, be transferred as unrestricted land to the account of University Houses and Lands at its cost of $2800. The money needed to complete this settlement is to be advanced to the Observatory to be repaid (with interest at five per cent) in instalments of not less than $600 a year."

The effect of the above votes is to include in the account called University Houses and Lands the Willard and Rindge marshes in the Brighton district, as well as all the Cambridge land belonging to the University or to any of its departments, except the following restricted parcels: —

1. All the land deeded to the President and Fellows in 1876 by the Trustees of the Museum of Comparative Zoölogy, on which are the University Museum and Peabody Museum.

West End Railway repair shops; coal and wood sheds on the College wharf.

Beside the Cambridge real estate not included in University Houses and Lands, as above stated, the following real estate in Boston and Hyde Park belonging to the University has now no valuation on its books of account: —

The Soldier's Field, given by Henry L. Higginson in 1890.

The Longfellow marsh, given by Henry W. Longfellow and others in 1870.

The Owen marsh, bequeathed by John Owen in 1882.

The Medical School land and buildings in and about North Grove Street.

The Medical School land and buildings in Boylston Street.

The Veterinary School land and building in Lucas Street.

The Bussey "Woodland Hill" estates, formerly in Roxbury and Dorchester.

The reversion in 1896 of the Stoughton pasture in the Dorchester district.

The recent investigations made by Mr. Danforth, the Deputy Treasurer, as to the lands in Cambridge which have long been owned by the College have brought to light the fact that nearly all the land under Holyoke House was owned by the College as early as 1654. This lot has for more than sixty years been considered as part of the Bordman land bought in 1794, and taxes have been paid upon it for many years past, but it is now clear that it is part of the real estate forever exempt from taxation or betterments by the College Charter and the Constitution of Massachusetts, as it appears under the name of "the houselott of Rob^{t} Broadish" in "An Inventory of the whole estate of Harv^{d} Colledge taken by the President & ffellows as they find the same to be Decemb. 10. 1654 at which time the Accounts thereof were given by M$^{r.}$ Henry Dunster late President of the s^{d} Colledge." It is also clear that a small tax which has for several years been paid on part of the Wadsworth House should not have been paid. It is still a matter of doubt as to how much, if any, of the Cambridge land acquired by the College in the later years of the last century and the earlier years of the present century was acquired before the limit of

Amounts brought forward, . . .	$508,049.66	$3,079.47
Scholarships of the **Class of 1856**,		
$10,000 Frem., Elkhorn & Mo. Valley R. R. 6's,	10,000.00	600.00
Charles Haven Goodwin Scholarship,		
Personal Note (paid during the year), ...		126.98

LIBRARY.

Charles Minot Fund (part of),		
$60,000 Buffalo, Bradford, & Pittsb. R. R. 7's,	60,000.00	4,200.00
Ichabod Tucker Fund (part of),		
Policy of Mass. Hospital Life Insurance Co., . .	5,000.00	200.00

MUSEUM OF COMPARATIVE ZOÖLOGY.

Agassiz Memorial Fund (part of),		
Advances for new building, &c., ...	24,113.79	1,315.20

OBSERVATORY.

Uriah A. Boyden Fund (part of),		
35 shares East Boston Ferry Co., ...	1.00	

SPECIAL FUNDS.

Bussey Trust,		
Real Estate, ...	413,092.80	21,970.01
Robert Troup Paine Fund (accumulating),		
$33,500 Massachusetts 5's, ...	38,095.00	1,610.82
Fund of the Class of 1834,		
Policy of Mass. Hospital Life Insurance Co., . .	1,000.00	40.00
Fund of the Class of 1853,		
Policies of Mass. Hospital Life Insurance Co., . .	3,625.00	121.00
George William Sawin Fund,		
12 shares Boston & Providence R. R., ...	3,063.00	70.00
Price Greenleaf Fund. The total amount of this Fund is $718,283.71, which is invested as follows: —		
$43,500 Consolidated R. R. of Vermont 5's, ...	38,280.00	2,175.00
12,200 Rutland R. R. 6's, ...	12,932.00	732.00
37,200 Rutland R. R. 5's, ...	34,968.00	1,860.00
1,000 Cheshire R. R. 6's, ...	1,110.00	60.00
46,500 Ogdens. & L. Champ. R. R. 6's, ...	46,500.00	2,790.00
23,800 Ogdens. & L. Champ. R. R. income 6's, . .	10,234.00	
3,000 Boston & Lowell R. R. 7's, ...	3,390.00	210.00
8,000 Michigan Air Line R.R. 8's (paid during yr.),		320.00
3,000 Chicago, Burl. & Quincy R. R. 4's, ...	2,880.00	120.00
4,000 Chicago, Burl. & Northern R. R. 5's, . . .	4,000.00	200.00
23,000 Union Pacific Railway 6's, ...	25,990.00	1,380.00
290 shares Northern R. R. (N. H.), ...	29,290.00	2,175.00
800 " Rutland " preferred, ...	28,000.00	2,400.00
40 " Ogdens. & L. Champ. R. R., ...	680.00	
317 " Boston & Maine "	48,746.21	3,011.50
360 " Boston & Lowell R. R., ...	46,800.00	2,520.00
237 " Fitchburg R. R. preferred, ...	22,541.33	817.50
Amounts carried forward, . .	$1,422,381.79	$54,104.48

Amounts brought forward, . .	$1,422,381.79	$54,104.48
355 shares Old Colony “	63,190.00	2,485.00
142 “ Chicago, Burl. & Quincy R. R., . . .	19,141.60	639.00
20 “ N.Y. Central & Hudson River “ . . .	2,260.00	90.00
292 “ Michigan Central “ . . .	28,032.00	1,460.00
122 “ Union Pacific Railway, ...	7,161.40	
52 “ West End Street Railway, ...	4,330.00	208.00
$50,000 Metropolitan Tel. & Tel. Co. 1st M. 5's, . .	49,750.00	2,270.83
25,000 New England “ “ “ “ 6's, ...	25,593.75	
25,000 Chic. Junc. R'y & Union Stock Yards 5's, .	23,500.00	312.45
200 shares N.Y., N. Haven & Hart. R.R., ...	45,225.00	500.00
100 “ “ “ “ “ “ “ (on acct. of),	17,025.00	
Lawrence Manufacturing Co.'s Note, ...	30,000.00	1,350.00
Manchester Mills Note, ...	25,000.00	423.61
Lowell Manufacturing Co.'s Note (paid during yr.),		358.44
Amoskeag Manufact. Co.'s “ “ “ “		1,650.00
United States Hotel Co.'s Notes, “ “ “		3,808.13
Mortgages . . . . ($6,500 “ “ “),	5,000.00	646.50
Deposit with New England Trust Co., ...	16,733.42	305.88
Totals, ...	$1,784,323.96	$70,612.32

The other Funds are invested as a whole. The general investments are stated in detail on pages 28 and 29 of this report, but the usual summary statement of them, with the income thereof, is as follows: —

Investments.	Principal, August 1, 1890.	Principal, July 31, 1891.	Income.
Notes, Mortgages, &c., ...	$564,713.40	$1,004,646.97	$35,386.58
Railroad Bonds and Premiums, . .	2,578,663.92	2,415,113.31	118,543.69
Railroad Stock, ...	419,592.00	154,871.51	15,691.00
Union Stock Yard & Transit Co., . .	28,062.50		
Sundry Bonds, ...	100,750.00	299,170.00	8,408.85
Manufacturing Stock, ...	60,738.54	38,122.29	4,670.00
Real Estate, ...	1,671,090.56	1,312,610.63	104,943.56
Unimproved Lands, ...	41,568.38		
Brattle Street Reversion (1918), . .	1,000.00	1,000.00	
Advances to Botanical Dept.		6,905.57	241.78
“ “ Bussey Trust, ...	37,513.76	37,513.76	1,875.69
“ “ Dining Hall Association,	24,232.16	22,732.16	1,453.93
“ “ University Lands, . . .	69,248.18	30,000.00	3,495.21
“ “ Observatory, ...	200.47	3,676.31	10.02
“ “ Observatory, Real Estate,	1,197.68		59.88
“ “ Lawn Tennis Association,	250.00	250.00	27.00
“ “ School of Veterinary Medicine, ...	16,848.84	16,518.94	1,010.93
Baring Brothers & Company, . . .	744.83	947.83	27.00
Term Bills due in October, ...	105,764.16	118,501.59	
Term Bills overdue, ...	2,262.38	2,243.12	
Cash in Suffolk National Bank, .	42,672.69	32,435.52	
Cash in hands of Bursar, ...	7,196.03	18,131.57	
Check in Treasurer's Office, for deposit, ...		133.06	
Totals of general investments,	$5,774,310.48	$5,515,524.14	$295,845.12
Totals of special investments,	1,347,544.48	1,784,323.96	70,612.32
Amounts, . . .	$7,121,854.96	$7,299,848.10	$366,457.44

During the year the new gifts for capital account and the proceeds of sale of the preferred stock of the Boston & Maine railroad have been invested in corporation notes, with a view to permanent investment in productive real estate in Boston as soon as a purchase can be advantageously made. The high price offered for New York, New Haven & Hartford Railroad stock early in 1891 tempted the Corporation to sell out its whole investment in that railroad; but afterwards the issue of new stock caused a heavy fall in the market price and the Corporation again made a large investment in the old stock and the rights to new stock. The net gain over cost from sales of stocks during the year was $36,817.25, and it was used, as heretofore, to reduce the book valuation of unimproved lands in Cambridge. The account of Advances for Railroad Bond Premiums has been credited with the sum of $31,790.50 as the fair yearly repayment from income on account of premiums advanced.

The net income of the general investments ($295,845.12) has been divided at the rate of $5\frac{15}{100}$ per cent among the Funds to which they belong, after allowing to the Carey Building Fund, the Botanical Building Fund and part of the Bruce Fund a special rate of four per cent on their balances during the period of construction, and to certain other temporary Funds and balances a special rate of three per cent. The fraction, which was $370.47, has been placed as usual to the credit of the University account.

The rate of income compared with that for 1889–90 shows a gain of $\frac{21}{100}$ of one per cent. The low rate of the previous year was due in part to repairs and improvements upon productive real estate, and the higher rate of this year was partly owing to better rates of interest on corporation notes.

The following table shows the income available for the departments dependent upon the College proper, and the expenditures in those departments: —

Interest on Funds for	
University Salaries and Expenses, ...	**$31,982.48**
Library Salaries and Expenses (not books), . .	**25,247.32**
College Salaries and Expenses, ...	**40,276.86**
Gymnasium, and repairs on College buildings, .	**none.**
College Term Bills, ...	**260,587.33**
Amount carried forward, . . .	**$358,093.99**

larger. The surplus for the year has been $2324.56. For 1889–90 the surplus was $4053.31.

The Museum of Comparative Zoölogy has spent all the income of its restricted Funds as required by the conditions of gift, and has used the surplus income of the Agassiz Memorial Fund as heretofore to pay interest upon, and to repay in part, the principal of the advances from the Memorial Fund, which were used to extend the Museum building and to buy fossils.

For the general account of the Observatory there has been a deficit of $518.28. For 1889–90 there was a deficit of $546.76. Large outlays have been made from the capital as well as the income of the Boyden Fund, for the expedition to Peru. Mr. Boyden's will permits the expenditure of capital; but it is understood that after the return of the expedition the income shall be for a time accumulated. During the year both receipts and payments for the Draper Memorial have been large.

The Bussey Institution has had a surplus of $2918.72 in spite of less income from the Bussey stores. For 1889–90 the surplus was $2473.14.

For the Veterinary School a surplus of $329.90, due to larger receipts from its Hospital and Forge, has been used to reduce its debt. For 1889–90 the surplus was $388.35.

Gifts have been received during the year as follows: —

GIFTS TO FORM NEW FUNDS OR INCREASE OLD ONES.

From William M. Prichard, $10,000, to found the Henry Warren Torrey Fund, the income to be applied from time to time to the publication of historical theses or monographs, to be selected from the recent writings of teachers or students in the Historical department.

From the estate of Mrs. Pastora E. Humphrey, her bequest of $10,000, to found the Henry B. Humphrey Fund, the income to be used for Scholarships.

Through Henry M. Spelman, subscriptions amounting to $3063, to found the George William Sawin Fund, the income to be paid to Mr. Sawin's mother during her life and after

From Roger Wolcott, $10,000, to found the J. Huntington Wolcott Fund, the income to be expended "in the purchase of books of permanent value for the University Library, the preference in selection to be given to works in the departments of History, Political Economy and Sociology"; and $10,000, to found the Huntington Frothingham Wolcott Fund, "the income to be expended by the Trustees of the Peabody Museum of American Archaeology and Ethnology, or their successors, for the promotion of archaeological and ethnological research and exploration, the purchase of objects illustrative thereof, or the publication of matter relating thereto."

The total amount of these gifts for capital account is $100,311.14, as is also stated on page 24 of this report.

GIFTS FOR IMMEDIATE USE.

From Mrs. Henry Draper of New York, an additional sum of $10,000, to be expended by the Director of the Observatory in prosecuting the researches in the photography of stellar spectra, with which the late Dr. Henry Draper's name is honorably associated.

From Robert Treat Paine, $200, for two prizes of $100 each "for the best essays by any students of the University on the ethical aspect of the modern social questions."

From Samuel Williston, $170, as a repayment with interest of scholarship money received by him while a student in the Law School.

From William G. Farlow, his annual gift of $450, towards the salary of the Assistant in the Cryptogamic Herbarium.

From Alfred T. White, $100, for the special library of books on Social Questions.

Through James S. Russell, nine anonymous gifts amounting to $1275, "to be used in equipping a library for the use of the Historical department."

From the estate of Walter Hastings, a final payment of $1532.10 for the erection of a dormitory on the grounds of Harvard College, to be called Walter Hastings Hall.

Subscriptions towards the construction of a fire-proof building for the storage of valuable manuscripts and photographic plates at the Observatory, paid to August 1, 1891, from

J. Randolph Coolidge	$100	Henry Lee	$500
A friend	500	E. C. Pickering	500
H. H. Hunnewell	200		$1,800

Subscriptions for cases and furniture for Professor Cooke's addition to the University Museum, paid to August 1, 1891, from

Edward Austin	$500	F. O. French	$100
Francis Bartlett	500	Mrs. G. L. Pratt	100
Miss Anna S. C. Blake	1,000	Miss Mary B. Pratt	100
Martin Brimmer	250	Nathaniel Thayer	250
Mrs. Elizabeth C. Hayden	1,000	W. A. Wadsworth	300
			$4,100

Subscriptions for a library for the Classical department, including $500 for fitting up its lecture-room in Harvard Hall, paid to August 1, 1891, from

E. H. Abbot	$100	F. W. Hunnewell	$100
C. F. Adams	500	D. P. Kimball	250
J. Q. Adams	100	Augustus Lowell	100
F. L. Ames	100	John Lowell	100
C. W. Amory	100	Arthur T. Lyman	100
John F. Andrew	100	G. C. Magoun	300
Francis Bartlett	500	Miss Ellen Mason	100
Thomas P. Beal	50	George H. Mifflin	100
George N. Black	100	Grenville H. Norcross	100
George Blagden	200	Gilbert R. Payson	100
S. Parkman Blake, Jr.	50	O. W. Peabody	100
E. I. Browne	50	Henry Pickering	50
Charles P. Curtis	100	Henry W. Pickering	100
George Dexter	100	William R. Robeson	100
W. S. Dexter	100	William G. Russell	100
W. Endicott, Jr.	250	Stephen Salisbury	200
O. B. Frothingham	100	J. O. Sargent	50
George A. Gardner	100	Thos. Wigglesworth	100
John L. Gardner	500	Robert C. Winthrop, Jr.	100
W. A. Gardner	500		
Franklin Haven, Jr.	100		$6400
Augustus Hemenway	100	Accrued interest	43.34
J. J. Higginson	250		$6443.34

Additional subscriptions from graduates of the Dental School, to be applied towards the immediate wants of the School, paid to August 1, 1891, from

Charles H. Abbot	$25	P. B. Laskey	$5
C. A. Brackett	25	Frank Perrin	10
Edwin P. Bradbury	25	William H. Potter	5
Thomas Fillebrown	20	James Shepherd	5
H. W. Gillett	5	Charles Wilson	10
			$135

Additional subscriptions for the present use of the Herbarium, paid to August 1, 1891, from

Frederick L. Ames	$500	Henry Lee	$500
B. P. Cheney	500	Augustus Lowell	250
A friend	500	Nathaniel C. Nash	250
George W. Hammond	100	F. H. Peabody	50
H. H. Hunnewell	500	Fiske Warren	100
Nathaniel T. Kidder	500		$3,750

Subscriptions for fitting up a psychological laboratory, purchasing apparatus, books, etc. for the department of Psychology, paid to August 1, 1891, from

Martin Brimmer	$100	Wm. Powell Mason	$100
G. M. Carnochan	100	James Parrish	50
Miss Harriet Lathrop Dunham	50	William A. Slater	3,000
A friend	500	S. D. Warren	100
Charles C. Jackson	100	Mrs. Henry Whitman	100
Theodore Lyman	100		$4,300

From Miss Lucy Ellis, an additional gift of $1000, for the Physiological department of the Medical School.

From Adolphe Cohn, $18, for the purchase of books for the French department.

From the Dante Society, the additional sum of $50, and from R. R. Whitehead of Florence, Italy, through the Dante Society, $24.25, for the purchase of books on Dante.

From John Simpkins, $50, towards equipping a library for the use of the Historical department.

From John O. Sargent, $100 additional, for the Sargent prize for 1890–91.

From John T. Morse, Jr., $150, for apparatus to illustrate Assistant Professor Channing's lectures in History 1.

From W. S. Bigelow, $70, for special use at the Medical School.

From Andrew P. Peabody, $200 additional, for prizes to be given to students in the Semitic languages for the academic year 1891–92.

From an anonymous friend, his annual gift of $500, to increase the salary of the Professor of Entomology.

From John Lowell, on behalf of himself and Mrs. Lowell, $400, the sixth yearly payment for the support of two Scholarships to be known as the George Emerson Lowell Scholarships.

From Mrs. C. M. Barnard, $600, her eighth yearly payment for the Warren H. Cudworth Scholarships.

From Henry C. Warren, $750 additional, " to be applied at the discretion of Professor C. R. Lanman, to the printing and publishing of Hindoo texts and of translations from the same, and to the purchase of Hindoo manuscripts," for the Sanskrit department.

From Jacob H. Schiff, $1000, for the purchase of books for a reference library for the Semitic department.

From Charles Fairchild, $2500, for the present use of the Geological department.

From Henry L. Higginson, $8877.53, to pay for grading and other expenses relating to The Soldier's Field.

From the Class of 1879, an additional gift of $105, to be used under the direction of Assistant Professor Taussig for the Political Economy reading-room.

Through Louis D. Brandeis, the second annual gift of $1000, from an anonymous friend of the Law School, to defray the expenses of the course in the Peculiarities of Massachusetts Law and Practice for the year 1891–92.

From William Meyer Lewin, $142, in recognition of benefits conferred upon him while a student at Cambridge.

From an anonymous friend, $100, to be added to the Fund of Scholarships and Beneficiary Money returned.

From George W. Wales, $200, for books for the Library, in continuance of former gifts for the same purpose.

From the Society for Promoting Theological Education, $1500, for the Divinity School, toward the expense of preparing the new catalogue.

Through E. C. Beckett, $10, a gift of grateful children, for the Veterinary Hospital.

From Mrs. Benjamin S. Rotch, $10,000, "to build and equip an electrical engineering workshop which shall be annexed to the Lawrence Scientific School."

From Henry R. A. Carey, $800.70, to pay most of the expenses of the Carey Athletic Building for 1890–91.

From Nathaniel C. Nash, $500, to be spent by Professor John Williams White in such manner as he shall think will best advance the interests of the Greek department.

From William W. Goodwin, $25.83, to be added to the income of the Charles Haven Goodwin Scholarship Fund for 1890–91.

The total amount of these gifts for immediate use is $64,928.75, as is also stated on page 22 of this report.

OTHER GIFTS ACKNOWLEDGED BY THE CORPORATION.

By the bequest of Mrs. Anna L. Möring, eleven hundred and eighty-two volumes, a collection of pamphlets, a marble bust of Cicero and a marble bust of Dr. L. de Wette, with pedestals.

From William Everett, a statue of Edward Everett by Hiram Powers.

From Samuel H. Russell, a set of reproductions of three water color views of Boston, taken in 1764, with a report of the Bostonian Society relating thereto, for the College Library.

From an unknown giver, a new piano for the department of Music.

By the bequest of J. B. Gross of Wilksbarre, Pa., a manuscript of miscellaneous papers.

From Winslow Warren Sever, two portraits, one of Nicholas Sever, Tutor and Fellow, who was born in 1680 and died in 1764, and one of Sarah Warren, his wife, who was born in 1692 and died in 1756.

From Mrs. Henry W. Foote, five hundred and twenty volumes and seventy-three pamphlets selected from the library of the late Henry W. Foote, for the library of the Divinity School.

By the bequest of George Bancroft, his portrait, painted by Gustavus Richter.

From Mrs. Francis Bowen, a portrait of the late Professor Bowen, painted by E. T. Billings.

From George von L. Meyer, the new gate-way at the Cambridge St. entrance to the College Yard.

From Arthur Lithgow Devens and his sisters, a portrait of the late General Charles Devens, painted by Frederic P. Vinton.

EDWARD W. HOOPER, *Treasurer.*

BOSTON, December 15, 1891.

by the Treasurer of Harvard College, July 31, 1891.

EXPENSES.

Paid to account of Expenses in the

University, as per Table I. (page 46).		
Fellowships,	$11,150.00	
Prizes,	550.00	
Salaries and other expenses,	47,632.84	
Interest on advances,	1,995.21	
Repairs and improvement on Sever Hall and Sacramento St. houses from Univ. funds,	12,010.12	$73,338.17
College, as per Table II. (page 48).		
Salaries for instruction,	198,627.29	
Repairs on College Edifices, not valued on Treasurer's books,	12,322.34	
General expenses,	58,387.42	
Scholarships,	29,955.01	
Beneficiaries,	22,948.73	
Prizes,	1,135.32	
Botanic Garden,	8,224.39	
Herbarium,	6,329.84	
Hemenway Gymnasium,	7,886.02	
Carey Athletic Building,	1.302.04	
Jefferson Physical Laboratory,	2,957.12	
Account of new Botanical Building,	9,798.12	
Books for special departments,	4,994.61	
Apparatus &c., from special gifts,	2,548.34	
Account of Professor **Cooke's** addition to the University Museum,	10,366.61	
Printing, from Publication Funds,	1,420.86	
Summer Schools,	5,726.46	
Appleton Chapel,	7,564.03	
Appropriations for collect'ns and laboratories,	17,320.63	409,815.18
Library, as per Table III. (page 56).		
Books,	13,905.33	
Salaries and other expenses,	27,999.54	41,904.87
Divinity School, as per Table IV. (page 58).		
Salaries and other expenses,	26,517.55	
Scholarships and Beneficiaries,	2,090.21	28,607.76
Law School, as per Table V. (page 60).		
Salaries and other expenses,		45,402.46
Medical School, as per Table VI. (page 61).		
Salaries, Laboratory expenses, &c.,	54,744.73	
Scholarships and Beneficiaries,	1,625.00	
Fees repaid to Instructors,	3,568.50	
Boylston Medical Prizes,	52.00	
Amounts carried forward,	$59,990.23	$599,068.44

General Statement of Receipts and Disbursements for the year ending

INCOME (*continued*).

Amounts brought forward, . . .		$26,304.50	$205,574.44
Dividends on Stocks.			
Fitchburg R. R., preferred, ...		817.50	
N. Y., New Haven & Hartford R. R., .		4,875.00	
Boston & Providence R. R.		70.00	32,067.00
Real Estate, from rents, &c. (gross receipts).			
Cambridge (Houses and Lands), ...		37,750.88	
Boston (general investments), ...		111,356.80	
Bussey real estate, ...		37,772.55	
Sundry estates, ...		12,956.54	199,836.77
Term Bills.			
College, as per Table II., ...		260,587.33	
Divinity School, as per Table IV., ...		5,394.38	
Law School, as per Table V., ...		40,450.00	
Medical School, as per Table VI., ...		67,615.33	
Dental School, as per Table VII., ...		7,040.00	
Lawrence Scientific School, as per Table VIII., .		13,551.50	
Bussey Institution, as per Table X., ...		670.00	
School of Veterinary Medicine, as per Table XI.,		2,427.00	397,735.54
Sundries.			
William Pennoyer Annuity, ...		171.00	
Professor **Gray's** copyrights, ...		2,518.23	
Trustee of **Thayer** Scholarships, ...		3,000.00	
Trustees of **Edward Hopkins**, ...		229.30	
Trustee of **William B. Spooner**, ...		333.33	
Use of Library by resident graduates and others, .		220.00	
Sale of grass, wood, old material, etc., ...		5,040.91	
" " old examination papers, ...		319.16	
" " time signals from Observatory, ...		2,933.34	
" " tickets to Commencement Dinner, ...		687.00	
" " books, pamphlets, catalogues, &c., ...		2,380.14	
Board of horses, cattle, &c. at Bussey Institution,		1,764.69	
Repayment of advances for microscopes, ...		200.00	
Laboratory instruction to Dental and Veterinary students, ...		483.00	
Use of lockers at Gymnasium and Athletic Build'g,		2,532.00	
Fees for admission examinations, &c., ...		1,402.00	
Fees in Infirmary and Laboratory, Dental School,		4,705.30	
Fees from Veterinary Hospital and Forge, ...		17,015.97	
Subscribers to Veterinary Hospital, ...		1,770.00	
Balance of fees for Summer Courses, ...		8,107.50	
Laboratory fees: Chemical	$6,274.63		
Physical	1,823.50		
Natural History . . .	1,972.50	10,070.63	65,884.00
Sundry gifts for immediate use, see page 19, ...			64,928.75
Total amount of income (carried forward), . .			$966,026.50

by the Treasurer of Harvard College, July 31, 1891.

EXPENSES (*continued*).

Amounts brought forward, ...		$59,990.23	$599,068.44
Warren Anatomical Museum, ...		310.67	
J. Ingersoll Bowditch Fund, ...		228.68	
Ellis Gift, ...		204.31	
Account of new addition, ...		27,531.00	
General expenses, ...		12,952.66	101,217.55
Dental School, as per Table VII. (page 63).			
Salaries and other expenses, ...			8,669.44
Lawrence Scientific School, as per Table VIII. (page 64).			
Salaries and other expenses, ...		20,840.44	
Museum of Comparative Zoölogy, ...		29,913.80	50,754.24
Observatory, as per Table IX. (page 65), ...			64,958.46
Bussey Institution, as per Table X. (page 66),		11,480.24	
Arnold Arboretum, as per Table X. (page 66),		10,488.70	21,968.94
School of Veter'y Medicine, as per Table XI. (page 67), .			20,905.78
Real Estate, expenses.			
Insurance.			
Cambridge, ...	$225.00		
Boston (general investments), . .	1,156.39		
Bussey real estate, ...	567.13		
Sundry estates, ...	48.00	1,996.52	
Taxes.			
Cambridge, ...	2,080.66		
Boston (general investments), . .	17,819.34		
Bussey real estate, ...	8,021.42		
Sundry estates, ...	871.81	28,793.23	
Interest.			
Bussey real estate (on advances), ...		1,875.69	
Repairs, improvements, care, cleaning and sundries.			
Cambridge, ...	8,487.03		
Boston (general investments), . .	7,359.30		
Bussey real estate, ...	2,065.06		
Sundry estates, ...	536.38	18,447.77	
Heating and hoisting for **Bussey** stores, including repairs and renewal of apparatus, ...	5,488.92		
Less for sales of heat and power, .	2,215.68	3,273.24	54,386.45
Amount carried forward, ...			$921,929.30

Amount brought forward, ...		$966,026.50

RECEIPTS EXCLUSIVE OF INCOME.

GIFTS.

Edward Russell Scholarship (additional), ...	$200.00	
Lowell Fund for a Botanic Garden (additional), . .	1,000.00	
Law School Book Fund " . .	5,000.00	
Medical School Subscription Fund " . .	6,500.00	
Henry T. Morgan Fund " . .	6.81	
Henry Warren Torrey Fund, ...	10,000.00	
The **Joseph Lovering** Fund for Physical Research,	7.720.00	
Henry B. Humphrey Fund, ...	10,000.00	
George William Sawin Fund, ...	3,063.00	
William B. Spooner Fund, ...	10,000.00	
Charlotte F. Blanchard Fund, ...	4,771.33	
George Cheyne Shattuck Memorial Fellowship, .	5,000.00	
John Ware " " .	5,000.00	
Charles Eliot Ware " " .	5,000.00	
J. Huntington Wolcott Fund, ...	10,000.00	
Huntington Frothingham Wolcott Fund, . . .	10,000.00	
Dental School Endowment (additional), ...	7,050.00	100,311.14

SALES.

$12,000	Burl. & Mo. R. (Neb.) R. R. 6's (paid off),	12,000.00	
3,000	Ft. Scott, So. E. & Memp. R. R. 7's "	3,150.00	
8,000	Michigan Air Line R. R. 8's, . . . "	8,000.00	
150,000	Kansas City & Cameron R. R. 10's, ...	150,000.00	
1,886	shares Boston & Maine R. R. preferred, . .	263,804.25	
700	" N. Y., New Haven & Hartford R. R.,	188,562.50	
250	" Union Stock Yard & Transit Co., .	37,500.00	
31	" Nashua Manufacturing Co., ...	17,221.25	
73	" Cheshire R. R. pref. (exchanged), .	8,614.00	
	Cheshire R. R. dividend of capital, ...	219.00	
	Scrip Fitchburg R. R., ...	28.67	
	Rights Boston & Maine R. R., ...	5,587.12	694,686,79

SUNDRIES.

From Dining Hall Association, to reduce debt, . .	1,500.00	
Advances to premiums on $2,182,050 R.R.B., repaid,	31,790.50	
" " accrued interest and expenses on Bonds repaid, ...	1,803.45	
" " Observatory Real Estate repaid, . . .	440.12	
" " improvements on **Gray** and **Andrews** Estates repaid, ...	953.56	36,487.63

Amount carried forward, ...		$1,797,512.06

by the Treasurer of Harvard College,
July 31, 1891.

EXPENSES (*continued*).

Amount brought forward,		$921,929.30
Improvements on The Soldier's Field,		8,877.53
Walter Hastings Building Bequest.		
Paid on account of the erection of **Walter Hastings** Hall (additional),		3,728.93
Annuities.		
Bussey,	$6,300.00	
Gore,	607.39	
Lucy Osgood,	420.00	
Class of 1802,	105.33	
Bemis,	2,550.72	
Gurney,	1,000.00	
George William Sawin,	70.00	11,053.44
Class Funds.		
Paid the Secretary of the **Class of 1834,**	$40.00	
" " " " **1853,**	121.00	161.00
Sundry payments from income.		
To the Treasurer of the Museum of Fine Arts, from **Gray** Fund for Engravings,	790.25	
Part of the income of the **Daniel Williams** Fund for the benefit of the Mashpee Indians,	529.54	
The income of the **Sarah Winslow** Fund, to the Minister and Teacher at Tyngsboro', Mass.,	231.72	
For account of the Semitic collection and library,	3,597.74	
Legal services,	1.53	5,150.78
Total amount of expenses,		$950,900.98

INVESTMENTS AND SUNDRY PAYMENTS.

Burl. & Mo. River (Neb.) R. R. 6's,	$10,000 cost,	$10,225.00	
New Eng. Teleph. & Telegr. Co. 6's,	125,000 "	127,968.75	
Chic. Junc. R'ys & Un. Stock Y'ds 5's,	100,000 "	95,795.00	
Massachusetts 5's, 1894 (**Paine** Fund),	2,000 "	2,122.50	
Paid for accrued interest and expenses on the above bonds,		1,397.20	
550 shares N. Y., New Haven & Hartford R. R.,		123,768.75	
550 " " " " " (on acc't),		93,352.76	
12 " Boston & Prov. R. R. (**Sawin** Fund),		3,063.00	
97 " Fitchburg R. R. preferred (exchanged),		8,614.00	466,306.96
Amount carried forward,			$1,417,207.94

General Statement of Receipts and Disbursements
for the year ending

Amount brought forward, ...		$1,797,512.06
Balance, August 1, 1890.		
Cash in Suffolk National Bank, ...	$42,672.69	
Cash in New England Trust Co., ...	16,513.21	
Cash in hands of Charles F. Mason, Bursar, .	7,196.03	
Term Bills due October, 1890, ...	105,764.16	
" " overdue, ...	2,262.38	174,408.47
Total, ...		$1,971,920.53

by the Treasurer of Harvard College, July 31, 1891.

Amount brought forward, ...		$1,417,207.94

INVESTMENTS AND SUNDRY PAYMENTS (*continued*).

95% of subscription for $25,000 Chicago Junction Railways & Union Stock Yards 5s, ...		23,750.00
Improvements on **Gray** and **Andrews** Estates, ...		3,000.00
Purchase of **Rindge** Marsh (balance), ...		751.65
Paid on account of the extension of the Natural History Laboratories, and for purchase of fossils, ...	4,016.51	
Less amount repaid by Museum of Comparative Zoölogy, ...	1,686.85	2,329.66
Invested in notes of Manufacturing Companies, &c.,	1,515,000.00	
Less mortgages and notes paid off, ...	1,178,500.00	336,500.00
Paid Baring Brothers & Co., in account, ...	$207.37	
Less commission and expenses, ...	4.37	203.00

Balance, July 31, 1891.

Cash in Suffolk National Bank, ...	$32,435.52	
Cash in New England Trust Co., ...	16,733.42	
Check in Treasurer's Office, for deposit, ...	133.06	
Cash in hands of Charles F. Mason, Bursar, . .	18,181.57	
Term Bills due October, 1891, ...	118,501.59	
" " overdue, ...	2,243.12	188,178.28
Total, ...		$1,971,920.58

The following Account exhibits the State of the Property, as entered upon the Treasurer's Books, July 31, 1891.

Separate Investments, as stated in detail on pages 8, 9, and 10 of this report, consisting of		
Mortgages and Notes,	$83,353.03	
Railroad Bonds,	250,284.00	
Sundry Bonds,	136,938.75	
Railroad Stocks,	365,485.54	
University Houses and Lands,	435,757.89	
Other Real Estate,	457,587.10	
Sundries,	54,917.65	
Amounting to		$1,784,323.96
And "General Investments" as follows: —		
Mortgages and Notes.		
Mortgages,	29,646.97	
Amoskeag Manufacturing Co.'s Note,	200,000.00	
Boott Cotton Mills' Notes,	80,000.00	
Chicago, Burlington & Quincy R. R. Note,	150,000.00	
Lawrence Manufacturing Co.'s Note,	70,000.00	
Lowell Manufacturing Co.'s Note,	50,000.00	
Lowell Bleachery's Note,	20,000.00	
Merrimack Manufacturing Co.'s Note,	50,000.00	
Pacific Mills' Notes,	220,000.00	
Stark Mills' Notes,	110,000.00	
Tremont & Suffolk Mills' Note,	25,000.00	1,004,646.97
Railroad Bonds.		
$312,000 Burl. & Mo. R. in Nebr. non ex. 6's,	312,000.00	
50,000 Kan. City, St. Jos. & C. B., 1st M. 7's,	50,000.00	
25,000 Lincoln & No. West., 1st M. 7's,	25,000.00	
150,000 Atchison & Nebraska, 1st M. 7's,	150,000.00	
107,000 Ft. Scott, So. E. & Mem., 1st M. 7's,	107,000.00	
393,000 Eastern, 1st Mortg. 6's,	393,000.00	
£14,600 Eastern, " " " Sterling,	71,050.90	
674,000 Chicago, Burl. & Quincy Consol. 7's,	674,000.00	
60,000 Chicago, Burl. & Quincy 5's,	60,000.00	
100,000 Chicago, Burl. & Quincy Conv. 5's,	100,000.00	
175,000 U. P. Omaha Bridge 1st M. 5's,	175,000.00	
Railroad Bond Premiums,	298,062.41	2,415,113.31
Sundry Bonds.		
$100,000 Metropolitan Tel. & Tel. Co. 1st M. 5's,	99,500.00	
100,000 New England " " " " 6's,	102,375.00	
100,000 Chicago Junct. Railways and Union Stock Yards Coll. Trust 5's,	97,295.00	299,170.00
Amount carried forward,		$5,503,254.24

Amount brought forward, . . .			$5,503,254.24
Sundry Stocks.			
Amoskeag Manufacturing Co., . . .	12 shares,	3,654.00	
Merrimack " " . . .	17 "	17,000.00	
Pacific Mills, ...	20 "	17,468.29	
N. Y., New Haven & Hartford R. R.,	350 "	78,543.75	
" " " " " " paid on account of 450 shares		76,327.76	192,993.80
Real Estate.			
Amory Estate, Franklin Street, Boston, . . .		165,615.81	
Webb Estate, Washington Street, Boston, . .		164,604.79	
Gray and Andrews Estates, Washington Street, Boston, ...		664,263.16	
Cole Estate, Washington Street, Boston, . . .		250,000.00	
Estate on Hawley Street, Boston, ...		38,650.78	
Estate on Hawkins Street, Boston, ...		29,476.09	
Reversion of Buildings in Brattle Street, Boston,		1,000.00	1,313,610.63
Sundries.			
Due from Dining Hall Association, ...		22,732.16	
" " Lawn Tennis Association, ...		250.00	
" " Bussey Trust, ...		37,513.76	
" " School of Veterinary Medicine, . .		16,518.94	
" " Observatory, ...		3,676.31	
Advances to University Lands, ...		30,000.00	
" " Botanical Department		6,905.57	
Baring Brothers & Co., ...		947.83	
Term bills due October, 1891, ...		118,501.59	
" " overdue, ...		2,243.12	239,289.28
Cash in Suffolk National Bank, ...		32,435.52	
" " hands of Charles F. Mason, Bursar, . . .		18,131.57	
Check in Treasurer's Office, for deposit, ...		133.06	50,700.15
Total, ...			$7,299,848.10

The foregoing Property represents the following Funds and Balances, and is answerable for the same.

Principal, Aug. 1, 1890.	UNIVERSITY FUNDS.	Principal, July 31, 1891.	
$107,737.54	Stock Account (so called), . .	$130,444.37	
125,138.74	Ins. and Guaranty F'd (so called), .	141,638.74	
15,750.00	**Israel Munson** Fund, ...	15,750.00	
16,871.63	**Leonard Jarvis** "	16,871.63	
9,000.00	**Sever** Fund (unrestricted), . . .		
25,000.00	**John C. Gray** Fund, ...	25,000.00	
115,966.56	**George B. Dorr** Fund, ...	115,966.56	
5,000.00	**Seth Turner** Fund, ...	5,000.00	
113,817.44	**Francis E. Parker** Fund, . . .	113,817.44	
30,000.00	**William Perkins** Fund,. . . .	30,000.00	
25,370.03	**John L. Russell** Fund, ...	25,370.03	
5,000.00	**Stanton Blake** Fund, ...	5,000.00	
21,303.78	**Walter Hastings** Fund, ...	20,382.57	
	Charlotte F. Blanchard Fund . .	4,771.33	
	Joseph Lee Fund	10,000.00	
62,981.34	President's Fund, ...	63,224.86	
155.13	**Thomas Cotton** Fund, ...	155.04	
5,250.00	**Samuel D. Bradford** Fund, . . .	5,250.00	
242,211.97	Retiring Allowance Fund, ...	254,685.89	
22,000.00	**John Cowdin** Fund, ...	22,000.00	
56,376.99	**John Parker** Fellowships, . . .	56,655.41	
10,756.96	**Robert Treat Paine** Fellowship, .	10,810.95	
10,626.62	**Harris** Fellowship, ...	10,923.91	
10,846.76	**John Thornton Kirkland** Fellows'p,	10,855.38	
10,999.53	**James Walker** Fellowship, . . .	11,066.03	
32,082.28	**Rogers** Fellowships, ...	31,859.50	
10,628.07	**Henry Lee** Memorial Fellowship, .	10,725.41	
10,178.07	**Ozias Goodwin** Memorial Fellows'p,	10,252.24	
10,178.07	**H. B. Rogers** Memorial Fellowship,	10,252.24	
81,943.73	**Henry T. Morgan** Fund, . . .	81,950.54	
11,189.70	**John Tyndall** Scholarship, . . .	11,265.98	
2,215.27	**Sumner** Prize Fund, ...	2,329.34	
6,148.20	**George B. Sohier** Prize Fund,. .	6,214.82	
316.40	**John O. Sargent** Prize Fund, . .	332.67	
6,464.86	Lectures on Political Economy Fund,	6,797.81	
150.00	**Robert N. Toppan** Prizes (balance),	150.00	
	Robert Treat Paine Prizes "	200.00	
150.00	Dante Prizes "	150.00	
200.00	Semitic Prizes "	200.00	$1,278,320.69
	COLLEGE FUNDS.		
27,748.64	**Alford** Professorship, ...	27,748.64	
28,337.40	**Boylston** "	28,337.40	
21,619.50	**Eliot** "	21,619.50	
10,000.00	**Eliot** " (Jon. Phillips's gift)	10,000.00	
$1,307,711.21	. . . Amounts carried forward, . .	$87,705.54	$1,278,320.69

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
$1,307,711.21	. . . Amounts brought forward,	$387,705.54	$1,278,320.69
3,500.01	Erving Professorship,	3,500.01	
35,990.99	Fisher “	35,990.99	
20,217.08	Hersey “	20,217.08	
21,744.18	Hersey “ (Thomas Lee's gift),	21,744.18	
3,747.33	Hollis “ (Mathematics),	3,747.33	
34,517.60	Hollis “ (Divinity),	34,517.60	
43,062.93	McLean “	43,062.93	
21,000.00	Perkins “	21,000.00	
25,020.19	Plummer “	25,020.19	
52,500.00	Pope “	52,500.00	
56,441.25	Rumford “	56,441.25	
23,139.83	Smith “	23,139.83	
180,772.57	Gurney Fund,	184,582.38	
16,240.38	Fund for Permanent Tutors,	16,240.38	
15,796.97	Lee Fund for Reading	15,796.97	
145,000.00	Class Subscription Fund,	145,000.00	
2,840.32	Paul Dudley Fund for Lectures,	2,886.58	
31,500.00	Jonathan Phillips F'd (unrestricted),	31,500.00	
1,050.00	John A. Blanchard “ “	1,050.00	
5,120.50	John W. P. Abbot “ “	5,384.23	
13,286.60	Daniel H. Peirce “ “	13,353.03	
6,230.00	Daniel Austin “ “	6,230.00	
2,088.41	Schol. & Benef money ret. (balance),	2,883.02	
343.93	Henry Flynt's Bequest,	344.61	
3,406.62	Abbot Scholarship,	3,432.08	
1,081.87	Alford “	1,137.59	
5,305.19	Bartlett “	5,328.40	
5,634.64	Bassett “	5,664.84	
11,906.22	Bigelow “	11,936.04	
109,424.65	Bowditch “	109,560.04	
339.34	Bright “ (balance),	376.84	
3,503.95	Browne “	3,534.41	
6,144.46	Ruluff S. Choate Scholarship,	6,160.88	
7,382.71	Class of 1802 Scholarship,	7,457.60	
2,945.29	“ 1814 “	2,946.96	
5,545.77	“ 1815 “ (Kirkland),	5,631.39	
3,917.91	“ 1817 “	3,969.69	
3,180.68	“ 1828 “	3,344.50	
3,157.94	“ 1835 “	3,320.58	
4,095.11	“ 1841 “	4,106.00	
4,493.23	“ 1852 “ (Dana),	4,724.62	
10,000.00	“ 1856 “	10,000.00	
3,073.35	“ 1867 “	3,231.61	
9,987.21	Crowninshield “	10,501.54	
600.00	W. H. Cudworth “ (balance),	600.00	
5,397.96	George & Martha Derby Scholar'p,	5,425.96	
5,363.31	W. S. Eliot Scholarship,	5,389.50	
5,834.96	Farrar “	5,835.46	
$2,290,584.65	. . . Amounts carried forward,	$1,076,954.66	$1,278,320.69

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
$2,290,584.65	. . . Amounts brought forward.	$1,076,954.66	$1,278,320.69
10,061.75	**Richard Augustine Gambrill** Sch.	10,179.94	
6,000.00	**Charles Haven Goodwin** Sch. . .	6,004.48	
3,206.02	**Greene** Scholarship, ...	3,371.13	
5,804.75	**Levina Hoar** Scholarship, ...	5,853.71	
9,584.05	**Hodges** "	10,077.63	
5,340.98	**Hollis** "	5,416.04	
3,547.06	**Matthews** " (balance), .	4,438.39	
5,162.69	**Merrick** '	5,228.58	
7,566.33	**Morey** "	7,655.98	
6,682.70	**Pennoyer** "	6,698.96	
3,245.30	**Perkins** "	3,412.42	
865.66	**Rodger** "	910.26	
3,291.72	**Henry B. Rogers** "	3,311.26	
2,912.96	**Edward Russell** "	3,273.28	
5,788.38	**Mary & Leverett Saltonstall** Sch.,	6,086.46	
956.10	**Dorothy Saltonstall** Scholarship, .	1,005.33	
3,191.75	**Sever** Scholarship, ...	3,206.14	
9,760.69	**Sewall** "	9,863.38	
46,452.88	**Shattuck** "	46,828.54	
5,739.49	**Slade** "	5,701.71	
3,344.85	**Story** "	3,517.12	
2,463.67	**Stoughton** "	2,523.87	
4,037.03	**Gorham Thomas** "	4,044.94	
6,963.45	**Toppan** "	7,022.04	
24,464.94	**Townsend** "	24,608.23	
3,988.45	**Walcott** "	4,093.83	
10,204.21	**Whiting** "	10,229.72	
	Henry B. Humphrey Fund, . .	10,139.77	
9,833.88	**Exhibitions**, ...	9,834.69	
1,796.14	**Palfrey** Exhibition, ...	1,798.63	
1,200.00	**Samuel Ward** Fund, ...	1,200.00	
1,592.94	**John Glover** "	1,674.98	
10,984.26	**Quincy Tufts** "	11,008.94	
5,368.00	**Day** "	5,380.28	
10,375.88	**Munroe** "	10,398.24	
8,102.23	**Price Greenleaf** Aid (balance), . .	4,311.68	
4,059.38	**Boylston** Prizes for Elocution, . .	4,013.42	
13,178.48	**Bowdoin** Prizes for Dissertations, .	13,232.15	
1,199.20	**Hopkins** Gift for "Deturs" (balance),	1,234.93	
682.15	**Chauncey Wright** Fund, ...	717.27	
50,000.00	**Increase S. Wheeler** Fund, . . .	50,000.00	
1,033.57	Fund for Religious Services, . . .	1,033.57	
15,417.88	**John E. Thayer** Fund, ...	15,613.69	
6,345.73	Classical Publ. F'd of **Class of 1856**,	6,372.55	
42,099.18	Botanic Department Fund, ...	39,763.10	
56,882.31	**Lowell** Fund for a Botanic Garden, .	57,882.31	
23,695.86	Herbarium Fund, ...	25,020.29	
141.29	**Carey** Building Gift (balance), . .		
$2,755,200.87	. . . Amounts carried forward, .	$1,552,148.47	$1,278,320.69

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
$2,755,200.87	. . . Amounts brought forward,	$1,532,148.47	$1,278,320.6
75,000.00	Physical Laboratory Endowment, . .	75,000.00	
	Henry Warren Torrey Fund, . .	10,091.60	
	Joseph Lovering " . .	7,879.34	
395.12	**Jefferson** Physical Lab'y (balance),	1,320.84	
5,309.34	Gifts for Addition to Museum "	301.30	
1,385.29	Sundry Gifts (unexpended balances),	1,753.77	
2,882.44	Gifts for Botanical Building (balance),		
	" " Psychol. Lab'y and Lib'y "	2,485.88	
	" " Classical Library "	2,793.08	
	" " Historical " "	565.26	
	" " Geological Department "	2,515.62	1,656,855.1

LIBRARY FUNDS.

100,000.00	**Eben Wright** Fund, ...	100,000.00	
26,004.25	**Constantius** Fund, ...	25,976.77	
500.00	**Jarvis** Fund, ...	500.00	
10,572.25	**Daniel Treadwell** Fund, ...	10,572.25	
10,567.50	Subscription for Library, ...	10,569.93	
2,118.84	**Bowditch** Fund, ...	2,122.35	
112.57	**Bright** " (balance), . . .	242.82	
5,306.39	**Denny** "	5,301.37	
5,448.20	**Farrar** "	5,310.15	
3,135.50	**Haven** "	3,142.28	
10,093.91	**Hayes** "	10,085.61	
5,266.56	**Hayward** "	5,278.48	
2,397.98	**Hollis** "	2,392.08	
2,105.45	**Homer** "	2,115.93	
5,310.50	**Lane** "	5,316.40	
22,454.50	**Lowell** "	23,000.21	
60,041.01	**Minot** "	61,168.58	
6,993.98	**Mary Osgood** "	7,017.22	
7,163.19	**Lucy Osgood** "	7,149.58	
5,349.07	**Salisbury** "	5,485.29	
20,092.68	**Sever** "	20,132.33	
4,117.88	**Shapleigh** "	4,086.64	
37,509.36	**Sumner** "	37,589.39	
5,047.32	**Tucker** "	5,002.42	
5,298.65	**Ward** "	5,305.86	
15,937.04	**Walker** "	15,992.76	
196.16	**Wales** Gift (balance), ...	248.83	
581.54	**Waterston** " "	548.32	
	J. Huntington Wolcott Fund, . .	10,064.37	
204.24	Sundry gifts, etc. (unexpended balances),	156.08	391,874.3

DIVINITY SCHOOL FUNDS.

27,403.37	Divinity School (balance), ...	28,813.82	
37,583.74	**Bussey** Professorship, ...	37,583.74	
16,015.81	**Parkman** "	16,015.81	
$3,301,102.50	. . . Amounts carried forward, .	$82,413.37	$3,327,

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
$3,923,664.71	. . . Amounts brought forward,	$107,933.28	$3,954,144.05
50,375.00	**James Lawrence** Fund, ...	50,375.00	
30,686.85	**John B. Barringer** “	30,686.85	
100,440.00	**Sturgis Hooper** “	100,400.00	
	Rotch Building Gift (balance), . .	10,008.33	
50,000.00	**Gray** Fund for Zoölogical Museum,	50,000.00	
297,933.10	**Agassiz Memorial** Fund, . .	297,933.10	
7,594.01	Teachers' and Pupils' “ . .	7,594.01	
117,469.34	Permanent Fund, ...	117,469.34	
7,740.66	**Humboldt** “	7,740.66	780,140.57

MEDICAL SCHOOL FUNDS.

58,212.77	Medical School (balance), ...	63,429.59	
19,192.65	**Jackson** Medical Fund, ...	19,192.65	
17,129.20	**Geo. C. Shattuck** “	17,129.20	
13,141.50	**Warren** Fund for Anatom'l Museum,	13,507.64	
3,320.86	**Boylston** Fund for Medical Prizes,	3,439.89	
3,417.89	**Boylston** “ “ “ Books,	3,593.92	
2,027.12	Medical Library Fund, ...	1,881.62	
2,000.00	**Quincy Tufts** Medical Fund, . .	2,000.00	
25,512.68	**Edward M. Barringer** “ . .	25,512.68	
15,765.11	**Mary W. Swett** Fund, ...	15,765.11	
20,000.00	**Samuel W. Swett** “	20,000.00	
1,836.08	**Samuel E. Fitz** “	1,836.08	
26,892.04	**H. F. Sears** Building Gift (balance),		
6,172.90	**J. Ingersoll Bowditch** Fund, . .	6,262.13	
20,250.00	New Subscription Fund, ...	26,750.00	
190.33	**John Foster** Income for Medical Students (balance), ...	65.33	
5,192.20	**D. W. Cheever** Scholarship, . .	5,259.59	
	Geo. Cheyne Shattuck Memorial Fellowship, ...	5,064.37	
	John Ware Memorial Fellowship,	5,064.37	
	Chas. Eliot Ware “ “	5,064.37	
	Ellis Gift (balance), ...	1,814.11	242,632.65

OBSERVATORY FUNDS.

110,293.88	**Edward B. Phillips** Fund, . . .	110,293.88	
21,000.00	**James Hayward** “ . . .	21,000.00	
27,543.15	**David Sears** “ . . .	28,252.38	
11,721.16	**Josiah Quincy** “ . . .	11,436.92	
2,000.00	**Charlotte Harris** “ . . .	2,000.00	
5,000.00	**Thomas G. Appleton** “ . . .	5,000.00	
13,380.00	**Augustus Story** Fund, ...	13,380.00	
50,000.00	Observatory Endowment, ...	50,000.00	
120,110.35	**Robert Treat Paine** Fund, . .	120,110.35	
50,000.00	**Paine** Professorship, ...	50,000.00	
$5,237,205.54	. . . Amounts carried forward, .	$411,473.53	$4,976,917.27

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
$5,237,205.54	. . . Amounts brought forward,	$411,473.53	$4,976,917.27
228,047.31	**Uriah A. Boyden** Fund, ...	211,224.33	
43,611.14	**Bruce** Gift (balance), ...	43,536.17	
2,500.00	**J. Ingersoll Bowditch** Fund, . .	2,500.00	
799.57	**Draper Memorial** (balance), . .	929.31	
	Gifts for Building " . . .	1,830.54	671,493.88

OTHER FUNDS FOR SPECIAL PURPOSES.

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
413,092.80	**Bussey** Trust (income thereof, ½ to Bussey Institution, ¼ to Law School, and ¼ to Divinity School), . . .	413,092.80	
8,906.67	Bussey Institution (balance), . . .	11,825.39	
609.02	**Bussey** Building Fund, ...	609.02	
154,850.04	**James Arnold** "	155,248.77	
6,050.61	Arnold Arboretum " (balance), .	4,433.53	
50,000.00	**Bright** Legacy, ...	50,000.00	
36,545.12	**Robert Troup Paine** Fund, . . .	38,155.94	
42,000.00	**James Savage** Fund, ...	42,000.00	
3,171.50	**John Foster** "	3,171.50	
29,939.33	**Henry Harris** "	29,939.33	
16,386.78	**Gray** Fund for Engravings, . . .	16,420.38	
3,790.44	**Gospel Church** Fund, ...	3,985.62	
3,625.00	Fund of the **Class of 1853**, . . .	3,625.00	
1,000.00	" " " " " **1834**, . . .	1,000.00	
2,180.42	**Walter Hastings** Building Bequest,		
718,843.71	**Price Greenleaf** Fund, ...	718,283.71	
24,316.71	**Gore** Annuity Fund, ...	24,961.65	
5,029.28	**Lucy Osgood** Annuity Fund, . .	4,868.27	
50,728.42	**Bemis** Annuity Fund, ...	50,790.19	
118.98	Dental School (balance), ...	3,817.12	
8,155.85	Dental Subscription Fund, . . .	15,205.85	
9,422.14	Gifts for Semitic Collect. (balance),	6,186.76	
	" " " Library, " .	858.69	
	Geo. William Sawin Fund, . .	3,063.00	
	Huntington Frothingham Wolcott Fund, ...	10,064.37	
	Gains and Losses for General Investments, ...	18,590.84	1,630,197.73

FUNDS IN TRUST FOR PURPOSES NOT CONNECTED WITH THE COLLEGE.

Principal, Aug. 1, 1890.		Principal, July 31, 1891.	
16,125.90	**Daniel Williams** Fund for the conversion of the Indians, ...	16,426.85	
4,802.68	**Sarah Winslow** F'd, for the Minister and Teacher at Tyngsborough, Mass.,	4,812.87	21,239.22
$7,121,854.96			$7,299,848.10

Changes in the Funds during the year ending July 31, 1891.

Total amount of Funds and balances, July 31, 1891, as before stated,		$7,299,848.10	
Total amount of Funds and balances, August 1, 1890, as before stated,		7,121,854.96	
Showing a total increase during the year of			$177,993.14
Which is made up as follows: —			
Gifts forming new Funds or increasing old ones,		100,311.14	
Increase more than decrease of Funds and balances, which appear both at the beginning and end of the year,		33,304.96	
Increase of Funds established during the year,		712.56	
Credit balances created,		51,662.85	
Increase of Stock Account by credits from University Houses and Lands,		17,873.00	
Increase of Insurance and Guaranty Fund by credit from University Houses and Lands,		16,500.00	
		$220,364.01	
Deduct from this amount			
Decrease of Stock Account, by excess of expenditures over income in College, Library, and University accounts,	$714.68		
Sundry balances used up,	41,096.19		
Loss from change of special investment,	560.00		
		42,370.87	
			$177,993.14

Net increase of Funds and balances as above,	$120,052.87
Less decrease as above,	42,370.87
Leaving amount of the net increase of the Funds and balances, excluding gifts for capital account, as is also shown in the following table,	$77,682.00

Statement showing Changes in the Different Funds

Increase of Funds and balances which appear both at the beginning and the end of the year, being the excess of income (including gifts for immediate use) over payments towards the special objects of those Funds.

UNIVERSITY.

Stock Account,	$5,548.51	
President's Fund,	243.52	
Retiring Allowance Fund,	12,473.92	
Robert Treat Paine Fellowship,	53.99	
John Tyndall Scholarship,	76.28	
Sumner Prize Fund,	114.07	
Harris Fellowship,	297.29	
James Walker Fellowship,	66.50	
John Parker "	278.42	
John T. Kirkland "	8.62	
Henry Lee Memorial Fellowship,	97 34	
Ozias Goodwin " "	74.17	
H. B. Rogers " "	74.17	
John O. Sargent Prizes,	16.27	
George B. Sohier "	66.62	
Lectures on Political Economy,	332.95	$19,822.64

COLLEGE.

Daniel H. Peirce Fund,	66.43	
Paul Dudley Fund,	46.26	
Henry Flynt's Bequest,	.68	
John W. P. Abbot Fund,	263.73	
Gurney Fund,	3,809.81	
Abbot Scholarship,	25.46	
Alford "	55.72	
Bartlett "	23.21	
Bassett "	30.20	
Bigelow "	29.82	
Browne "	30.46	
R. S. Choate Scholarship,	16.42	
Class of 1802 "	74.89	
" **1815** " **(Kirkland),**	85.62	
" **1817** "	51.78	
" **1828** "	163.82	
" **1835** "	162.64	
" **1841** "	10.89	
" **1852** " **(Dana),**	231.39	
" **1867** "	158.26	
Crowninshield "	514.33	
George & Martha Derby Scholarship,	28.00	
W. S. Eliot Scholarship,	26.19	
Amounts carried forward,	$5,906.01	$19,822.64

and balances during the year ending July 31, 1891.

Decrease of Funds and balances which appear both at the beginning and the end of the year, being the excess of payments over income received (including gifts for immediate use) for the special objects of those Funds.

UNIVERSITY.

Thomas Cotton Fund,	.09	
Rogers Fellowships,	222.78	
Walter Hastings Fund,	921.21	$1,144.08

COLLEGE.

Slade Scholarship,	87.78	
Price Greenleaf Aid (balance),	3,790.55	
Boylston Prizes for Elocution,	45.96	
Botanic Department Fund,	2,336.08	
Gifts for addition to Museum,	5,008.04	11,218.41

LIBRARY.

Constantius Fund,	27.48	
Waterston Gift (balance),	33.22	
Farrar Fund,	138.05	
Hayes "	8.30	
Hollis "	5.90	
Lucy Osgood "	13.61	
Shapleigh "	31.24	
Denny "	5.02	
Tucker "	44.90	
Sundry gifts (unexpended balances),	48.16	355.88

LAWRENCE SCIENTIFIC SCHOOL AND MUSEUM OF COMPARATIVE ZOÖLOGY.

Sturgis Hooper Fund,		40.00

MEDICAL SCHOOL.

Medical Library Fund,	145.50	
Foster income for Medical Students (balance),	125.00	270.50

OBSERVATORY.

Uriah A. Boyden Fund,	16,822.98	
Josiah Quincy Fund,	284.24	
Bruce Gift (balance),	74.97	17,182.19
Amount carried forward,		$30,211.06

Statement showing Cha

INCREASE

Amounts brought forwar

Greene	Scholarship,	. . . .
Hodges	“	. . . .
Bowditch	“	. . . .
Bright	“	(balance)
Class of 1814	“	. . . .
Farrar	“	. . . .
R. A. Gambrill	“	. . . .
C. H. Goodwin	“	. . . .
Levina Hoar	“	. . . .
Hollis	“	. . . .
Pennoyer	“	. . . .
Perkins	“	. . . .
Rodger	“	. . . .
Henry B. Rogers	“	. . . .
Matthews	“	(balance)
Merrick	“	. . . .
Morey	“	. . . .
Edward Russell	“	. . . .
Mary & Leverett Saltonstall Scho		
Dorothy Saltonstall	Scholarship,	.
Sever	Scholarship,	. . . .
Sewall	“	. . . .
Shattuck	“	. . . .
Story	“	. . . .
Stoughton	“	. . . .
Toppan	“	. . . .
Townsend	“	. . . .
Gorham Thomas	“	. . . .
Walcott	“	. . . .
Whiting	“	. . . .
John Glover Fund, ...		
Bowdoin Prizes, ...		
Chauncey Wright Fund, ...		
Scholar. and Benefic. Money Returned		
John E. Thayer Fund, ...		
Classical Publication Fund, ...		
Herbarium Fund, ...		
Jefferson Physical Laboratory (balan		
Exhibitions, ...		
Palfrey Exhibition, ...		
Quincy Tufts Fund, ...		
Day Fund, ...		
Munroe Fund, ...		
Hopkins Gift for “Deturs” (balance)		
Sundry gifts (unexpended balances), .		

Amount carried forwa

and balances during the year ending July 31, 1891. (Continued.)

DECREASE.

Amount brought forward, ...		$30,211.06
FUNDS FOR SPECIAL PURPOSES.		
Lucy Osgood Annuity Fund, ...	161.01	
Arnold Arboretum (balance), ...	1,617.08	
Gifts for Semitic Collection (balance), ...	3,235.38	5,013.47
		$35,224.53
Sundry balances used up.		
Sever Fund, ...	9,000.00	
Walter Hastings Building Bequest, ...	2,180.42	
Carey " Gift, ...	141.29	
Botanical " Gifts, ...	2,882.44	
H. F. Sears " Gift, ...	26,892.04	41,096.19
Decrease of Stock Account by excess of expenditures over income, in College, Library, and University Accounts, ...		714.68
Price Greenleaf Fund, loss from change of special investment, ...		560.00
Amount carried forward, ...		$77,595.40

Statement showing Changes in the Different Funds

INCREASE.

Amount brought forward,		$33,082.00

LIBRARY.

Subscription Fund,	$2.43	
Lane "	5.90	
Lowell "	545.71	
Hayward "	11.92	
Sumner "	80.03	
Bowditch "	3.51	
Bright " (balance),	130.25	
Haven "	6.78	
Salisbury "	136.22	
Homer "	10.48	
Minot "	1,127.57	
Mary Osgood "	23.24	
Sever "	39.65	
Ward "	7.21	
Walker "	55.72	
Wales Gift (balance),	52.67	2,239.29

DIVINITY SCHOOL.

Balance,	1,410.45	
Winn Professorship,	500.00	
John W. Quinby Fund,	66.74	
Jackson Foundation,	31.32	
Joshua Clapp Scholarship,	81.05	
J. H. Kendall "	141.40	
A. W. Buttrick Fund,	65.59	
Beneficiary Money Returned (balance),	129.37	
George Chapman Scholarship,	25.61	
Thomas Cary "	24.66	
Nancy Kendall "	25.42	2,501.61

LAW SCHOOL.

Balance,		11,635.88

LAWRENCE SCIENTIFIC SCHOOL AND MUSEUM OF COMPARATIVE ZOÖLOGY.

Balance, L. S. S.,		2,324.56

MEDICAL SCHOOL.

Balance,	5,216.82	
Warren Fund for Anatomical Museum,	366.14	
Boylston Fund for Medical Books,	176.03	
D. W. Cheever Scholarship,	67.39	
Boylston Fund for Medical Prizes,	119.03	
J. Ingersoll Bowditch Fund,	89.23	6,034.64
Amount carried forward,		$57,817.98

and balances during the year ending July 31, 1891. (Continued.)

DECREASE.

Amount brought forward, ...	$77,595.40
Amount carried forward, ...	$77,595.40

Statement showing Changes in the Different Funds

INCREASE.

Amount brought forward, ...		$57,817.98
OBSERVATORY.		
David Sears Fund, ...	$709.23	
Draper Memorial (balance), ...	129.74	838.97
FUNDS FOR SPECIAL PURPOSES.		
Bussey Institution (balances), ...	2,918.72	
James Arnold Fund, ...	398.73	
Robert Troup Paine Fund, ...	1,610.82	
Gospel Church Fund, ...	195.18	
Gore Annuity "	644.94	
Daniel Williams "	300.95	
Sarah Winslow "	9.69	
Gray Fund for Engravings, ...	33.60	
Bemis Annuity Fund, ...	61.77	
Dental School (balance), ...	3,698.14	9,872.54
Increase of Funds established during the year.		
Henry B. Humphrey Fund, ...	139.77	
Henry Warren Torrey "	91.60	
Joseph Lovering "	159.34	
J. Huntington Wolcott "	64.37	
Huntington Frothingham Wolcott Fund, .	64.37	
George Cheyne Shattuck Memor'l Fellowship,	64.37	
John Ware " "	64.37	
Charles Eliot Ware " "	64.37	712.56
Credit balances created.		
Robert Treat Paine, Gift for Prizes, ...	200.00	
Gifts for Psychological Laboratory and Library,	2,485.88	
" " Classical Library, ...	2,793.08	
" " Historical "	565.26	
" " Observatory Building, ...	1,830.54	
Gift " Geological Department, ...	2,515.62	
" " Semitic Library, ...	858.69	
Rotch Building Gift, ...	10,008.33	
Ellis Gift, ...	1,814.11	
Joseph Lee Fund, ...	10,000.00	
Gains and Losses for General Investments, . .	18,590.84	51,662.35
Increase of Stock Account by credits from University Houses and Lands, ...		17,873.00
Increase of Insurance and Guaranty Fund by credit from University Houses and Lands, ...		16,500.00
Total, ...		$155,277.40

and balances during the year ending July 31, 1891. (Continued.)

DECREASE.

Amount brought forward, ...	$77,595.40
Balance, which is the net increase of the Funds and balances for the year ending July 31, 1891, excluding gifts for capital account, ...	77,682.00
Total, ...	$155,277.40

The following tables are not found, in their present form, in the Treasurer's books. They are intended to exhibit with some detail the resources and the expenditures of each department of the University. The income of every Fund held by the University is given in these tables, and also the sum paid out for the specific object of each and every Fund, in case that sum be either less or more than the actual income of the Fund. If the object to which the income of a Fund is to be applied be a general one, — like salaries, for example,— no separate mention is made in these tables of that appropriation. That particular payment is merged with others of the same kind under the general heading. A balanced summary of these tables will be found on page 71.

TABLE NO. I.

THE UNIVERSITY.

RECEIPTS.

Income of the unappropriated fund heretofore called the Stock Account, at present accumulating,		$5,548.51
Income of the following funds: —		
Insurance and Guaranty,		6,444.66
Israel Munson,		811.12
Leonard Jarvis,		868.91
Samuel D. Bradford,		270.37
John C. Gray,		1,287.50
George B. Dorr,		5,972.30
Seth Turner,		257.50
Henry T. Morgan,		4,220.27
Henry Harris, ½ of income,		770.93
Francis E. Parker,		5,861.58
William Perkins,		1,545.00
Stanton Blake,		257.50
John Cowdin, from special investment,		1,694.14
Walter Hastings, from sp. investm't,	$2,070.16	
Interest on accumulated income,	18.75	2,088.91
John L. Russell,		1,203.55
Charlotte F. Blanchard,		133.08
Thomas Cotton,		7.57
President's,		3,243.52
Parker Fellowships,		2,903.42
John Thornton Kirkland Fellowship,		538.62
Harris Fellowship,		547.29
James Walker Fellowship,		566.50
Rogers Fellowships,		1,652.22
Robert Treat Paine Fellowship,		553.99
John Tyndall Scholarship,		576.28
Henry Lee Memorial Fellowship,		547.34
Ozias Goodwin " "		524.17
Henry Bromfield Rogers Memorial Fellowship,		524.17
Sumner Prize,		114.07
George B. Sohier Prize,		316.62
Amount carried forward,		$51,871.61

TABLE I., CONTINUED.

RECEIPTS.

Amount brought forward, ...	$51,871.61	
John O. Sargent Prize, ...	16.27	
Retiring Allowance (accumulating), ...	12,478.92	
Lectures on Political Economy, ...	332.95	$64,694.75
From **John O. Sargent**, gift for prize, ...	100.00	
Andrew P. Peabody, gift for prizes, ...	200.00	
Robert Treat Paine, gift for prizes, ...	200.00	500.00
Balance remaining after dividing the net income among the Funds, ...	370.47	
Use of house by College officer, ...	400.00	
For care of the **Sarah Winslow** Fund, ...	5.94	
Sale of Catalogues, Calendars, and Directories, . . .	1,772.73	
Examination fees for degrees of Ph.D. and S.D., . .	60.00	
Net rents from Foxcroft and other University real estate,	781.80	3,390.94
		$68,585.69

PAYMENTS.

Overseers' Expenses.		
Advertising, postage, &c., ...	$221.60	
Printing President's Annual Report, ...	1,201.70	
Printing Treasurer's " "	248.30	
Printing other reports, and auditing Treasurer's accounts, ...	400.35	$2,071.95
Office Expenses.		
President's, ...	589.57	
Treasurer's, ...	676.58	
Bursar's, ...	1,779.94	
Supt. of Buildings' and Janitor's, ...	154.09	
Corporation Rooms (fuel, rent, furniture, &c.), .	2,558.03	5,758.21
Salaries.		
President, ...	8,007.66	
Treasurer and Deputy Treasurer, ...	6,000.00	
Secretary of the University, ...	2,500.00	
Secretary of the Board of Overseers, ...	200.00	
Bursar, ...	3,000.00	
Bursar's Assistant, ...	1,200.00	
Clerks Treasurer's office, ...	3,800.00	
Superintendent of Buildings, ...	2,400.00	27,107.66
Memorial Hall and Sanders Theatre.		
Insurance, ...	565.71	
Repairs, fuel, gas, &c., ...	737.49	1.303.20
General Expenses.		
Advertising, ...	76.50	
Labor, &c. on grounds outside of College Yard,	2,094.75	
Subscription to Mercantile Agency, ...	300.00	
Watering streets, and water, ...	262.80	
Amounts carried forward, ...	$2,734.05	$36,241.02

TABLE I., CONTINUED.

PAYMENTS

Amounts brought forward, ...	$2,734.05	$36,241.02
General Expenses.		
Watchmen, ...	961.44	
Freight, diplomas, and sundries, ...	438.92	
Printing, ...	292.97	
Music, Commencement, ...	185.00	
Annual Catalogue and Calendar, ...	2,804.50	
Repairs and improvements on President's House,	511.26	
Legal services, ...	20.00	
Gift to Cambridge Firemen's Relief Association,	250.00	
Cases for the Semitic Collection, ...	3,000.00	
Taxes on certain unimproved lands, ...	193.68	11,391.82
		$47,632.84
On account of improvements in Sever Hall, from **Sever** Fund, ...	9,000.00	
Repairs, improvements, etc., on Sacramento St. houses, from **Walter Hastings** Fund, ...	3,010.12	12,010.12
Interest on Advances for University Lands, ...		1,995.21
Fellowships.		
John Parker, ...	2,625.00	
Harris, ...	250.00	
John Thornton Kirkland, ...	550.00	
James Walker, ...	500.00	
Rogers, ...	1,875.00	
Morgan, ...	3,000.00	
Robert Treat Paine, ...	500.00	
Ozias Goodwin Memorial, ...	450.00	
Henry Bromfield Rogers Memorial, ...	450.00	
Henry Lee Memorial, ...	450.00	
John Tyndall Scholarship, ...	500.00	11,150.00
Prizes.		
Andrew P. Peabody, ...	200.00	
George B. Sohier, ...	250.00	
John O. Sargent, ...	100.00	550.00
		$73,338.17

TABLE No. II.

THE COLLEGE.

RECEIPTS.

From Term Bills.		
Instruction, ...	$208,140.00	
Rents available for general expenses, ...	52,447.33	260,587.33
Income of Scholarship Funds.		
Abbot, ...	175.46	
Alford (accumulating), ...	55.72	
Amounts carried forward.	$231.18	$260,587.33

TABLE II., CONTINUED.

RECEIPTS.

Amounts brought forward,		$231.18	$260,587.33
Bartlett,		273.21	
Bassett,		290.20	
Bigelow,		613.16	
Bowditch,		5,635.39	
Bright, ½ income of **Bright Legacy,**		1,287.50	
Browne,		180.46	
Ruluff Sterling Choate,		316.42	
Class of 1802,		380.22	
" 1814,		151.67	
" 1815 (Kirkland),		285.62	
" 1817,		201.78	
" 1828 (accumulating),		163.82	
" 1835 (accumulating),		162.64	
" 1841,		210.89	
" 1852 (Dana) (accumulating),		231.39	
" 1856, from special investment,		600.00	
" 1867 (accumulating),		158.26	
Crowninshield (accumulating),		514.33	
George and Martha Derby,		278.00	
Wm. Samuel Eliot,		276.19	
Farrar,		300.50	
Richard Augustine Gambrill,		518.19	
Charles Haven Goodwin,		304.43	
Greene (accumulating),		165.11	
Price Greenleaf,		3,000.00	
Levina Hoar,		298.96	
Hodges (accumulating),		493.58	
Hollis,		275.06	
Henry B. Humphrey,		364.77	
William Merrick,		265.89	
Morey,		389.65	
Pennoyer. Interest,	$115.26		
Annuity,	171.00	286.26	
Perkins (accumulating),		167.12	
Rodger (accumulating)		44.60	
Henry Bromfield Rogers,		169.54	
Edward Russell (accumulating),		160.32	
Mary & Leverett Saltonstall (accumulating),		298.08	
Dorothy Saltonstall (accumulating),		49.23	
Savage,		300.00	
Sever,		164.39	
Sewall,		502.69	
Shattuck,		2,392.33	
Slade,		295.56	
Story (accumulating),		172.27	
Stoughton (accumulating),		60.20	
Amounts carried forward,		$23,881.06	$260,587.33

TABLE II., CONTINUED.

RECEIPTS.

Amounts brought forward, ...		$23,881.06	$260,587.33
Gorham Thomas, ...		207.91	
Toppan, ...		358.59	
Townsend, ...		1,259.95	
Walcott, ...		205.38	
Whiting, ...		525.51	26,438.40
Received from the Trustee of the **Thayer** Scholarships,		$,3000.00	
" for the **Warren H. Cudworth** "		600.00	
" " " **George Emerson Lowell** "		400.00	
" " " **Matthews** Scholarships (½ of net rents of Hall), ...		5,391.33	9,391.33
Other Beneficiary Funds, income of.			
" Exhibitions,"		506.45	
Palfrey " Exhibition,"		92.49	
Samuel Ward. From special investment, . .		50.00	
John Glover (accumulating), ...		82.04	
Quincy Tufts, ...		565.68	
Moses Day, ...		276.45	
Munroe, ...		534.36	
Price Greenleaf Aid, ...		17,139.42	
Scholarship and Beneficiary Money			
Returned, income, ...	$108.56		
Returned by beneficiaries, . . .	242.00	350.56	19,597.45
Prize Funds, income of.			
Ward Nicholas Boylston Prizes for Elocution,		$209.04	
James Bowdoin Prizes for Dissertations, . .		678.67	
Edward Hopkins Gift for " Deturs."			
From Trustees, ...	$229.30		
Interest on unexpended balance, .	61.75	291.05	
Chauncey Wright, ...		35.12	1,213.88
Funds for Instruction, income of,			
Alford Professorship, ...		$1,429.07	
Boylston "		1,459.36	
Eliot "		1,113.43	
J. Phillips' addition to **Eliot** Professorship,		500.00	
Erving Professorship, ...		180.25	
Fisher "		1,853.54	
Hersey " ⅗ inc. of the Fund,		624.71	
Hollis " (Mathematics), . .		192.97	
Hollis " (Divinity), . . .		1,777.68	
McLean "		2,217.74	
Perkins "		1,081.50	
Plummer "		1,288.53	
Pope "		2,703.75	
Rumford "		2,906.71	
Amounts carried forward, ...		$19,329.24	$317,228.39

TABLE II., CONTINUED.

RECEIPTS.

Amounts brought forward,	$19,329.24	$317,228.39
Smith "	1,191.71	
Fund for Permanent Tutors,	836.36	
Thos. Lee Fund for the Hersey Professorship,	1,119.82	
Thos. Lee " " Reading,	813.55	
Class Subscription,	7,467.50	
Henry Flynt,	16 89	
Paul Dudley Fund,	146.26	
Gifts for salaries,	950.00	31,871.33
Income of **Jonathan Phillips** unrestricted Fund,	$1,622.25	
" " **John A. Blanchard** " "	54.07	
" " **Daniel H. Pierce** " "	664.33	
" " **J. W. P. Abbot** Fund (accumulating),	263.78	
" " **John E. Thayer** "	794.03	
" " Fund for Religious Services,	53.25	
" " **Gurney** Fund,	9,309.81	
" " Classical Publication Fund of the **Class of 1856,**	326.82	
" " **Increase Sumner Wheeler** Fund,	2,575.00	
" " **Henry Warren Torrey** Fund,	214.60	
" " The **Joseph Lovering** Fund for Physical Research,	159.34	16,037.23
Hemenway Gymnasium.		
For use of lockers,		2,380.00
Carey Athletic Building.		
Additional gift from **Henry Astor Carey,**	800.70	
Interest on unexpended balance,	3.63	
For use of lockers,	152.00	956.33
Jefferson Physical Laboratory.		
Income from Endowment,	3,862.50	
Interest on unexpended balance,	20.34	3,882.84
Professor **Cooke's** addition to the University Museum.		
Gifts received,	4,100.00	
Interest on unexpended balance,	64.73	4,164.73
Sanskrit Department.		
Additional gift from **Henry C. Warren,**		750.00
Geological Department.		
Gift of **Charles Fairchild** for immediate use,	2,500.00	
Interest,	15 62	2,515.62
Psychological Laboratory and Library.		
Gifts received,	4,300.00	
Interest on unexpended balance,	96.77	4,396.77
Amount carried forward,		$384,183.24

TABLE II., CONTINUED.

PAYMENTS.

Amount brought forward,	$1,243.34	
Bowditch,	5,500.00	
Bright,	1,250.00	
Browne,	150.00	
Ruluff Sterling Choate,	300.00	
Warren H. Cudworth,	600.00	
Class of 1802,	200.00	
" 1814,	150.00	
" 1815 (Kirkland),	200.00	
" 1817,	150.00	
" 1841,	200.00	
" 1856,	600.00	
George and Martha Derby,	250.00	
Wm. Samuel Eliot,	250.00	
Farrar,	300.00	
Richard Augustine Gambrill,	400.00	
Charles Haven Goodwin,	300.00	
Price Greenleaf,	3,000.00	
Levina Hoar,	250.00	
Hollis,	200.00	
Henry B. Humphrey,	225.00	
George Emerson Lowell,	400.00	
Matthews,	4,500.00	
William Merrick,	200.00	
Morey,	300.00	
Pennoyer,	270.00	
Henry Bromfield Rogers,	150.00	
Savage,	300.00	
Sever,	150.00	
Sewall,	400.00	
Shattuck,	2,016.67	
Slade,	333.34	
Thayer,	3,000.00	
Gorham Thomas,	200.00	
Toppan,	300.00	
Townsend,	1,116.66	
Walcott,	100.00	
Whiting,	500.00	$29,955.01
Paid other Beneficiaries from the following Funds.		
Exhibitions,	505.64	
Palfrey Exhibition,	90.00	
Samuel Ward,	50.00	
Quincy Tufts,	541.00	
Day Fund,	264.17	
Munroe Fund,	512.00	
Price Greenleaf Aid,	20,929.97	
Scholarship and Beneficiary Money Returned,	55.95	22,948.73
Amount carried forward,		$52,903.74

TABLE II., CONTINUED.

PAYMENTS.

Amount brought forward, ...			$52,903.74
Prizes. **Boylston** Prizes for Elocution, ...		255.00	
Bowdoin Prizes for Dissertations, ...		625.00	
"Deturs" from **Hopkins** Donation, ...		255.32	1,135.32
Hemenway Gymnasium.			
Salaries and wages, ...		5,720.00	
Janitors and cleaning, ...		1,363.63	
Fuel, water, gas, and sundries, ...		1,542.79	
Repairs and improvements, ...		290.04	
Apparatus, ...		354.05	
Photographing, ...		150.00	
		9,420.51	
Less amount received from other Departments,		1,534.49	7,886.02
Carey Athletic Building.			
Construction account, ...		351.27	
Janitors and cleaning, ...		569.96	
Fuel, water, gas, and sundries, ...		380.81	1,302.04
Jefferson Physical Laboratory.			
Insurance, ...		100.00	
Spent on building and fixtures, ...		334.27	
Laboratory expenses, ...	$3,122.85		
Less part paid by the College, . . .	600.00	2,522.85	2,957.12
John E. Thayer Fund.			
Expenses of Quarterly Journal of Economics, . .			598.22
Henry Warren Torrey Fund.			
Printing Harvard Historical Monographs (part), .			123.00
Classical Publication Fund of the **Class of 1856**.			
Printing Studies in Classical Philology, ...			300.00
Sanskrit Department.			
Printing Harvard Oriental Series, ...			399.64
Psychological Laboratory and Library.			
Paid for apparatus, books, &c., ...			1,910.89
Professor **Cooke's** addition to the University Museum.			
Paid on account of construction, &c., ...			10,366.61
Salaries for instruction, ...			198,627.29
Payments for College Edifices not valued on Treasurer's books.			
Repairs and improvements, &c., ...			12,322.34
Botanic Garden, for salaries, labor, repairs, materials, &c.,			8,224.39
Botanical Building.			
Paid on account of construction, &c., ...			9,798.12
Herbarium, for salaries, labor, repairs, materials, &c., .			6,329.84
Amount carried forward, ...			$315,184.58

TABLE II., CONTINUED.

PAYMENTS.

Amount brought forward,			$315,184.58
Summer Schools.			
Salaries,		$4,237.00	
Clerical services,		418.00	
Supplies, materials, &c.,		944.46	
Printing,		127.00	5,726.46
Paid from gifts for Books for Political Economy Dept.,		83.95	
" " " " Music "		199.68	
" " " " French "		15.08	
" " " " Mathematical "		57.58	
" " " " German "		80.12	
" " " " Social Questions,		81.02	
" " " " Classical Library,		3,705.16	
" " " " Historical "		772.02	4,994.61
gift of **N. C. Nash** for Greek Department,		500.00	
" " **John T. Morse**, Jr., for Historical apparatus,		137.45	637.45
General Expenses.			
Appropriations for collections and laboratories.			
Physical Apparatus (Prof. Trowbridge),	$1,000.00		
Mineralogy and Chemistry (Prof. Cooke),	800.00		
Botany (Prof. Goodale),	250.00		
Botany (Prof. Farlow),	350.00		
Geology (Prof. Shaler),	400.00		
Zoölogy (Prof. Mark),	250.00		
Psychology (Prof. James),	100.00		
Fine Arts (Prof. Norton),	200.00		
Geography (Prof. Davis),	100.00		
Petrography (Instructor Wolff),	50.00		
Drawing (Instructor Moore),	150.00		
Laboratory fees appropriated,	10,070.63		
Fuel and service in Nat. Hist. Labor's,	1,500.00		
Furniture and fittings for the Geological Section of the Museum,	1,500.00	16,720.63	
Jefferson Physical Laboratory.			
Expenses paid by the College,		600.00	
Appleton Chapel.			
Preaching and morning services,	3,315.00		
Organist and Choir-master,	1,400.00		
Choir,	1,400.00		
Books, hymnals, and music,	199.19		
Fuel, gas, cleaning, &c.,	1,096.09		
Services and wages,	153.75	7,564.03	
Admission examinations,	1,375.41		
Advertising,	75.00		
Amounts carried forward,	$1,450.41	$24,884.66	$326,543.10

TABLE III., CONTINUED.

RECEIPTS.

Amount brought forward, ...		$4,122.73	
Thomas Hollis, ...		123.50	
Sidney Homer, ...		108.41	
Frederick A. Lane, ...		273.52	
Lowell, ...		1,156.43	
Charles Minot. From special investm't,	$4,200.00		
Interest on unexpended balance,	2.11	4,202.11	
Lucy Osgood, ...		368.89	
Mary Osgood, ...		360.19	
Stephen Salisbury, ...		275.47	
Sever, ...		1,034.79	
Samuel Shapleigh, ...		212.08	
Charles Sumner, ...		1,931.71	
Ichabod Tucker. From special investm't,	$200.00		
Interest on unexpended balance,	2.42	202.42	
George W. Wales. Gift, ...	200.00		
Interest on unexpended balance,	10.09	210.09	
James Walker, ...		820.76	
Thomas W. Ward, ...		272.90	
Executors of **Robert Waterston**.			
Interest on unexpended balance, ...		29.97	
J. Huntington Wolcott, ...		64.37	$15,770.34
Gift from Dante Society, ...		74.25	
Sale of duplicates, &c., ...		8.52	82.77
James Savage Fund for general expenses (¾ of income),		1,397.25	
Constantius " " " ½ " "		669.60	
Daniel Treadwell " " "		544.46	
Daniel Austin " " "		320.84	
Eben Wright " " "		5,150.00	
Jarvis " " "		25.75	
Price Greenleaf " " "		17,139.42	25,247.32
Fees for use of Library, ...		220.00	
Sale of Bulletins, &c., ...		26.40	246.40
			$41,346.83

PAYMENTS.

For Books from	
Subscription Fund, ...	$541.82
Bowditch "	105.62
Bright "	1,163.07
Constantius "	697.09
Denny "	278.28
Farrar "	418.62
Haven "	154.72
Hayes "	528.14
Hayward "	259.33
Amount carried forward, ...	$4,146.69

TABLE IV., CONTINUED.

RECEIPTS.

Amount brought forward,		$8,758.70	
Winthrop Ward,		108.15	
Samuel Hoar,		54.07	
Abraham W. Fuller,		54.07	
Caroline Merriam,		54.07	
Joseph Baker,		405.56	
Thomas Tileston of New York Endowment,		2,060.00	
Oliver Ames,		875.50	
Henry P. Kidder,		515.00	
Abby Crocker Richmond,		51.50	
New Endowment,		3,678.49	
William B. Spooner Legacy.			
Interest received from Trustees,	$333.33		
Income of Fund,	300.40	633.73	$17,248.84
Income of Scholarship Funds.			
Jackson Foundation,		724.66	
Thomas Cary,		264.66	
George Chapman,		125.61	
Joshua Clapp,		206.05	
J. Henry Kendall,		281.40	
Nancy Kendall,		165.42	1,767.80
Income of other Funds.			
Joshua Clapp,		112.17	
William Pomroy,		54.07	
Hannah C. Andrews,		27.04	
Lewis Gould,		46.92	
Daniel Austin,		45.83	
Abner W. Buttrick,		665.59	
Adams Ayer,		51.50	
John W. Quinby,		66.74	
John L. Russell,		51.50	
Interest on Beneficiary money returned,		129.37	1,250.73
Benjamin Bussey Trust (½ of net income for use of this School),			3,917.12
Gift from Society for Promoting Theological Education,			1,500.00
Sale of duplicate books, &c.,			30.50
Term Bills.			
For instruction,		2,474.38	
For rents,		2,920.00	5,394.38
			$31,109.37

PAYMENTS.

For Salaries for instruction,	$20,022.32
Services and wages,	1,975.31
Labor, repairs, and improvements,	1,371.72
Cleaning and care of rooms,	1,414.86
Amount carried forward,	$24,784.21

TABLE V., CONTINUED.

PAYMENTS.

Amount brought forward,	$33,930.30	
Janitors, cleaning, &c.,	1,068.80	
Books and binding,	4,003.75	
Fuel,	825.37	
Gas,	698.70	
Printing	425.25	
Scholarships,	1,350.00	
Labor, repairs, and improvements,	727.51	
Stationery and postage,	260.11	
Freight, diplomas, and sundries,	369.20	
Water rates,	93.90	
Furniture,	454.17	
Services of examiners and proctors,	96.08	
Proportion of expenses of Gymnasium,	1,049.32	
Insurance,	50.00	$45,402.46

TABLE No. VI.

MEDICAL SCHOOL.

RECEIPTS.

Income of the following Funds.		
Medical School, balance,	$2,946.47	
Jackson,	988.44	
Warren, for Anatomical Museum,	676.81	
Ward Nicholas Boylston, for Medical Prizes,	171.03	
Ward Nicholas Boylston, for Medical Books,	176.03	
George C. Shattuck,	882.14	
Hersey Professorship, ⅖ income of the fund,	416.47	
Medical Library Fund,	104.39	
Quincy Tufts,	103.00	
David Williams Cheever Scholarship,	267.39	
George Cheyne Shattuck Memorial Fellowship,	64.37	
John Ware " "	64.37	
Charles Eliot Ware " "	64.37	
Edward M. Barringer,	1,313.92	
Henry Harris, ½ of income,	770.93	
Mary W. Swett,	811.89	
Samuel W. Swett,	1,030.00	
Samuel E. Fitz,	94.55	
Ellis Gift,	18.42	
J. Ingersoll Bowditch,	317.91	
New subscription,	1,160.91	
Henry F. Sears' gift for addition to Medical School. Interest on balance,	224.73	$12,668.54
Gifts for present use,		1,070.00
Amount carried forward,		$13,738.54

TABLE VI., CONTINUED.

PAYMENTS.

Amounts brought forward,	$1,249.89	$88,264.89
General Expenses.		
Fuel,	1,955.46	
Gas,	952.38	
Insurance,	197.50	
Printing,	315.50	
Services and wages,	2,916.17	
Stationery and postage,	294.02	
Water rates,	566.40	
Furniture,	295.35	
Janitors and cleaning,	3,562.57	
Freight, diplomas, and sundries,	308.58	
Supplies, tools, and material,	338.84	12,952.66
		$101,217.55

TABLE No. VII.

DENTAL SCHOOL.

RECEIPTS.

Income of the following Funds.		
Dental School, balance,	$6.13	
Endowment,	480.65	$486.78
Term Bills, for instruction,		7,040.00
Fees from Infirmary,	3,058.92	
" " Laboratory,	1,646.88	4,705.80
Gifts for present use,		135.00
		$12,367.58

PAYMENTS.

Advertising and catalogues,	$404.53	
Care of rooms and cleaning,	1,171.36	
Freight, diplomas, &c.,	145.61	
Fuel,	247.76	
Gas,	143.13	
Supplies, apparatus, &c.,	1,608.46	
Furniture,	91.00	
Repairs and improvements,	144.94	
Salaries for instruction,	4,150.00	
Stationery and postage,	74.25	
Water rates,	161.40	
Medical School, for Laboratory instruction,	327.00	$8,669.44

Table No. VIII.

LAWRENCE SCIENTIFIC SCHOOL, AND MUSEUM OF COMPARATIVE ZOÖLOGY.

RECEIPTS.

Income of the following Funds.			
Lawrence Scientific School, balance		$271.15	
Professorship of Engineering,		1,998.56	
Abbott Lawrence,		3,169.10	
James Lawrence,		2,594.31	
John B. Barringer,		1,580.38	
Gray Fund for Zoölogical Museum,		2,575.00	
Sturgis Hooper,		5,150.00	
Agassiz Memorial. Interest,	$13,994.20		
From special investment,	1,315.20	15,309.40	
Teachers and Pupils,		391.09	
Humboldt,		398.66	
Permanent Fund for Museum of Zoölogy,		6,049.65	$39,487.30
Gift of Mrs. **Benjamin S. Rotch** to build and equip an electrical engineering workshop,		10,000.00	
Interest,		8.33	
			10,008.33
Term Bills, for instruction,			13,551.50
			$63,047.13

PAYMENTS.

Paid on the order of the Faculty of the Museum of Comparative Zoölogy, from the following Funds.		
Gray,	$2,575.00	
Agassiz Memorial, general expenses,	13,622.55	
Agassiz Memorial, advances repaid,	1,686.85	
Teachers and Pupils,	391.09	
Humboldt,	398.66	
Permanent,	6,049.65	
Sturgis Hooper, Professor of Geology,	5,190.00	$29,913.80
Salaries for instruction,	16,609.10	
Instruments and apparatus,	574.37	
Books, Engineering Department,	100.00	
Books and binding,	249.97	
Printing,	109.25	
Fuel,	319.14	
Gas, water, freight, and sundries,	64.45	
Janitor and cleaning,	311.00	
Labor and repairs,	297.65	
Expenses Chemical Laboratory (part of),	132.53	
Scholarships,	1,150.00	
Proportion of expenses of Gymnasium,	330.97	
Furniture,	337.75	
Advertising,	254.26	20,840.44
		$50,754.24

TABLE NO. IX.

OBSERVATORY.

RECEIPTS.

Income of the following Funds.		
Edward B. Phillips,	5,680.14	
James Hayward,	1,081.50	
Robert Treat Paine,	6,185.66	
Paine Professorship of Practical Astronomy,	2,575.00	
Uriah A. Boyden,	11,744.37	
Augustus Story,	689.07	
David Sears,	1,418.46	
Josiah Quincy,	603.63	
James Savage (½ of net income),	465.75	
Charlotte Harris,	103.00	
Thomas G. Appleton,	257.50	
J. Ingersoll Bowditch,	128.75	
New Endowment,	2,575.00	$33,507.83
From sale of time signals,	2,933.34	
" " " Observatory publications,	2.00	
" " " grass,	20.00	2,955.34
Mrs. Henry Draper, gift for special research (additional),	10,000.00	
Interest on unexpended balance,	41.20	10,041.20
Miss Catherine W. Bruce's gift for a photographic telescope, interest on unexpended balance,		1,592.59
Subscriptions towards the construction of a fire-proof building,	1,800.00	
Interest on balance,	30.54	1,830.54
		$49,927.50

PAYMENTS.

From **Uriah A. Boyden** Fund, supplies, apparatus, services, &c.,		$28,567.35
" **Draper** Memorial, supplies, apparatus, services, &c.,		9,911.46
" **Bruce** gift for telescope,		1,667.56
" **Josiah Quincy** Fund, printing Observatory public'ns,		889.87
Salaries and wages,	14,859.86	
Cleaning and care of Observatory,	412.00	
Gas,	122.70	
Instruments and apparatus, including repairs on same,	1,446.94	
Repairs and improvements on buildings and grounds,	1,975.91	
Stationery, postage, and telegraphing,	398.65	
Fuel,	124.20	
Books and binding,	473.50	
Water rates,	67.90	
Printing,	2,338.62	
Freight, chemicals, and sundries,	440.90	
Amounts carried forward,	$22,661.18	$41,036.24

Table IX., c

PAYMEN

Amounts brought forw
Furniture, ...
Interest on advances, ...
On account of advances to Observatory real
Supplies and materials, ...
Rent of house, ...

Table No

BUSSEY INST

RECEIP

Interest on unexpended balance, ...
From **Bussey** Trust (½ net income), . .
From **Bussey** Building Fund, ...
Fees for instruction, ...
Sale of wood, hay, and sundries, ...
Horticultural Department, sale of flowers
Board of horses, cattle, &c., ...

PAYMEN

For Salaries, ...
Books, ...
Fuel for school building, ...
Services and wages, ...
Horticultural Department, expenses, . .
Repairs and improvements, ...
Grain, ...
Advertising, ...
Horse shoeing, ...
Seeds, ...
Farming tools, ...
Freight, telegrams, weighing hay, &c., .

James Arno

Receip

Income of Fund, ...

Payme

19/20 of income carried to Arnold Arboret

TABLE X., CONTINUED.

Arnold Arboretum.

Receipts.

Income of unexpended balance,	$311.63	
From James Arnold Fund,	7,576.04	
Sale of wood, grass, &c.,	983.95	$8,871.62

Payments.

Salary of Director and Assistant,	$3,500.00	
Expenses of Arboretum, services, labor, &c.,	6,988.70	$10,488.70

TABLE No. XI.

SCHOOL OF VETERINARY MEDICINE.

Receipts.

Term bills, for instruction,	$2,235.00	
" " " graduation fees,	180.00	
" " " extra examinations,	12.00	$2,427.00
Subscribers to Veterinary Hospital,		1,770.00
Fees from Hospital and Forge,		17,015.97
Interest on deposit with New England Trust Co.,		12.71
Gift for immediate use,		10.00
		$21,235.68

Payments.

Salaries and wages,	$11,326.17	
Instruments and apparatus,	159.15	
Rent,	1,280.00	
Hay, grain, supplies, &c.,	4,605.99	
Printing,	50.12	
Stationery, postage, telephone, &c.,	392.21	
Repairs and improvements,	644.52	
Fuel,	275.57	
Water,	38.60	
Gas,	252.46	
Freight, diplomas, and sundries,	177.88	
Taxes,	267.33	
Interest on advances,	1,010.93	
Advertising and catalogues,	231.35	
Medical School for Laboratory instruction,	156.00	
Legal expenses,	37.50	$20,905.78

Table No. XII.

MISCELLANEOUS FUNDS.

Bussey Trust.

Receipts.

Net income from Real Estate,		$21,970.01

Payments.

Annuities,	$6,300.00	
Legal services,	1.53	
One-half of the remaining income to Bussey Institution,	7,834.24	
One-quarter " " " Divinity School,	3,917.12	
" " " " " Law School,	3,917.12	$21,970.01

Gray Fund for Engravings.

Receipts.

Interest on Fund,	$823.85

Payments.

To the Treasurer of the Museum of Fine Arts,	$790.25

Annuity Funds.

Receipts.

Gore, interest,	$1,252.33	
Lucy Osgood, interest,	258.99	
Bemis, interest,	2,612.49	
George William Sawin, income of special investment,	70.00	$4,193.81

Payments.

Gore, annuities,	$607.39	
Lucy Osgood, annuity,	420.00	
Bemis, annuity,	2,550.72	
George William Sawin, annuity,	70.00	$3,648.11

Price Greenleaf Fund.

Receipts.

Income of special investment,		$37,278.84

Payments.

Scholarships,	$3,000.00	
Beneficiary money transferred to College account,	17,139.42	
Balance of income for Library expenses,	17,139.42	$37,278.84

TABLE XII., CONTINUED.

Daniel Williams Fund.

Receipts.

Interest on Fund,		$830.49

Payments.

Treasurer of Mashpee Indians,		$529.54

Sarah Winslow Fund.

Receipts.

Interest on Fund,		$247.35

Payments.

Minister at Tyngsborough, Mass.,	$115.86	
Teacher at " "	115.86	
Commission on income credited to University,	5.94	$237.66

Gifts for Semitic Collection and Library.

Receipts.

From Jacob H. Schiff,	$1,000.00	
Interest on unexpended balance,	221.05	$1,221.05

Payments.

For account of Semitic Collection,	$3,452.85	
" books and binding,	144.89	$3,597.74

Walter Hastings Building Bequest.

Receipts.

Additional amount received from Trustees,	$1,532.10	
Interest on unexpended balance,	16.41	$1,548.51

Payments.

Final payment on account of construction,		$3,728.93

Class Funds.

Receipts.

Class of 1834, income of special investment,	$40.00	
" " **1853**, " " " "	121.00	$161.00

Payments.

To Secretary of the **Class of 1834**,	$40.00	
" " " " " " **1853**,	121.00	$161.00

TABLE XII., co

Sundry Acc

Receipts

Gospel Church Fund (accumulating).
Interest on Fund, ...
Robert Troup Paine Fund (accumulatin
From special investment, ...
Huntington Frothingham Wolcott Fu
Interest on Fund, ...
Advances to Observatory, from general in
" " Botanical Dept. " "
Gains and Losses for General Investments,
Bond Premiums, ...
Stock Account, from University Houses an
Insurance and Guaranty Fund, "
Joseph Lee Fund, "

Payment

Annuity for **Class of 1802**, ...
Gurney annuities, ...
Advances to School of Veterinary Medicine
Price Greenleaf Fund, loss from chan
investment, ...

GENERAL SUMMARY OF THE TABLES.

			Receipts.	Payments.
Table I.		University, ...	$68,585.69	$73,338.17
Table II.		College, ...	428,204.89	409,815.18
Table III.		Library, ...	41,346.83	41,904.87
Table IV.		Divinity School, ...	31,109.37	28,607.76
Table V.		Law School, ...	57,038.34	45,402.46
Table VI.		Medical School, ...	82,096.87	101,217.55
Table VII.		Dental School, ...	12,367.58	8,669.44
Table VIII.		Lawrence Scientific School and Museum of Comparative Zoölogy,	63,047.13	50,754.24
Table IX.		Observatory, ...	49,927.50	64,958.46
Table X.	{	Bussey Institution, ...	14,398.96	11,480.24
		James Arnold Fund, ...	7,974.77	7,576.04
		Arnold Arboretum, ...	8,871.62	10,488.70
Table XI.		School of Veterinary Medicine, . .	21,235.68	20,905.78
Table XII.	{	Bussey Trust, ...	21,970.01	21,970.01
		Gray Fund for Engravings, . . .	823.85	790.25
		Annuity Funds, ...	4,193.81	3,648.11
		Price Greenleaf Fund, ...	37,278.84	37,278.84
		Daniel Williams Fund, ...	830.49	529.54
		Sarah Winslow Fund, ...	247.35	237.66
		Fund for Semitic Collection and Library, ...	1,221.05	3,597.74
		Walter Hastings Building Fund,	1,548.51	3,728.93
		Class Funds, ...	161.00	161.00
		Sundry Accounts, ...	72,258.06	1,995.23
			$1,026,738.20	$949,056.20
			949,056.20	
		Balance, ...	$77,682.00	

Which is the net increase of the Funds and balances, excluding gifts for capital account, as also shown on page 37.

Certificate of the Joint Committee of
Harvard College, for examining the B
entered in the Journal kept by him.

The undersigned, a joint committee o
Harvard College to examine the books a
year ending July 31, 1891, have, with
by them, examined and audited the C
August 1, 1890, to July 31, 1891, inclusi
notes, mortgages, certificates of stock, an
were received by him and on hand at th
his possession, or are fully accounted for
also noticed all payments, both of princi
said bonds or notes, and have seen that
duly credited to the College.

They have carefully examined all notes
ties invested during the said year, and are
have been judiciously made.

They have in like manner satisfied the
expended by the Treasurer, or charged i
vouched; such of them as are not suppor
by regular vouchers and receipts.

They have also seen that all the entries
the Ledger, and that the accounts there
carried forward correctly to new accounts

(Signed,)

JOHN QUINCY ADAMS,

T. JEFFERSON COOLIDG
ROGER WOLCOTT,
ROBERT BACON,
CHARLES HENRY PARKE
GEORGE B. CHASE,
ISRAEL M. SPELMAN,
JOHN L. GARDNER,

BOSTON, January 8, 1892.